Vol. 1009 Number 1

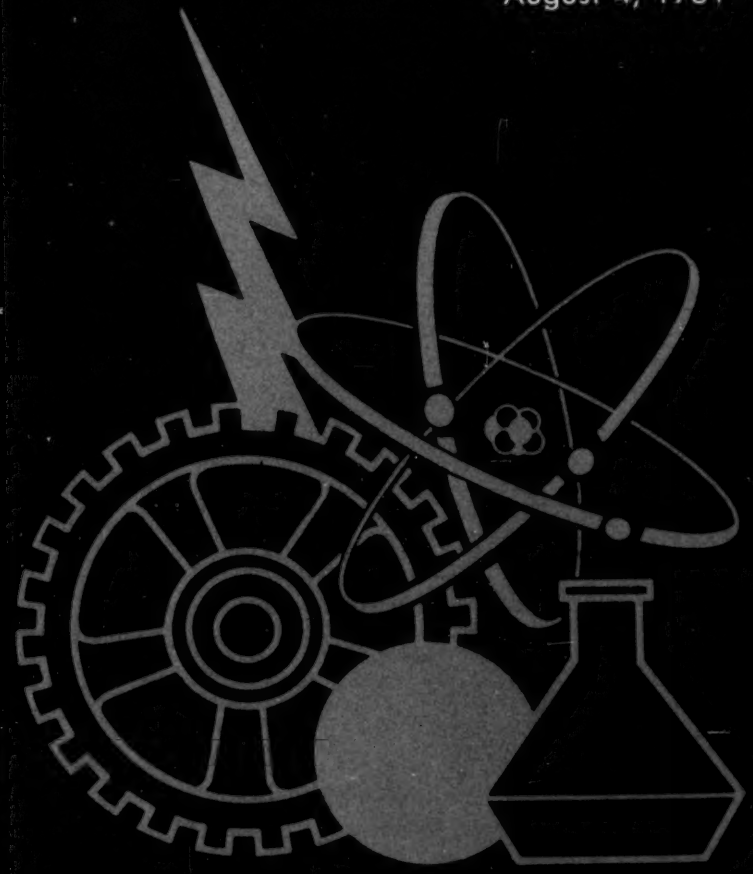
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 4, 1981



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 4, 1981 Volume 1009 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Availability of Patent and Trademark Office Notices on a Subscription Basis

Effective Mar. 3, 1981, a separate publication of a part of the *Official Gazette* entitled *Patent and Trademark Office Notices* is being made available on a subscription basis. This weekly periodical contains all notices which appear in the Patent *Official Gazette* and the Trademark *Official Gazette.* Additionally, current information regarding the general date status of trademark and patent applications is provided.

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Board of Appeals Decisions Rendered in the Month of June 1981

Affirmed	200
Affirmed in Part	25
Reversed	65
Total	290

REISSUE APPLICATION FILED

Notice under 37 CFR 1.11(b). The reissue application listed below is open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,150,867, Re. S.N. 255,441, Filed Apr. 20, 1981, Cl. 339/97P, PRE-WIRED TERMINAL CONNECTING BLOCK, Robert H. Knickerbocker, Owner of Record: *The Siemon Co., Watertown, Conn.,* Attorney or Agent: David S. Fishman, et al., Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 30,315, Reexam. No. 90/000,019, Requested: July 2, 1981, Cl. 313/51, PRECISION BASE MERCURY VAPOR LAMP, Carlo F. LaFiandra, Owner of Record: *Perkin-Elmer Corp.,* Attorney or Agent: John B. Young, et al., Ex. Gp.: 252, Requester: Perkin-Elmer Corp., Norwalk, Conn.

3,187,234, Reexam. No. 90/000,010, Requested: July 1, 1981, Cl. 361/182, SELECTIVE SIGNAL-RESPONSIVE CIRCUIT, Dwight, M. Muranka, et al., Owner of Record: *Y2 Associates,* Attorney or Agent: Beehler and Arant, Ex. Gp.: 212, Requester: Arthur V. Smith, Curtis, Morris & Safford, New York, N.Y.

3,253,944, Reexam. No. 90/000,004, Requested: July 1, 1981, Cl. 427/213, PARTICLE COATING PROCESS, Dale E. Wurster, Owner of Record: *Wisconsin Alumni Research Foundation,* Attorney or Agent: Howard W. Bremer, Ex. Gp.: 162, Requester: Wegner & Bretschneider, Washington, D.C.

3,747,228, Reexam. No. 90/000,011, Requested: July 1, 1981 Cl. 434/320, INTERVIEW MACHINE, Yujiro Yamamoto, Owner of Record: *Inventor,* Attorney or Agent: Beehler, Arant, Jagger & Bethel, Ex. Gp.: 334, Requester: Curtis, Morris & Safford, New York, N.Y.

3,751,826, Reexam. No. 90/000,013, Requested: July 1, 1981, Cl. 434/349, DEVICE FOR THE APPLICATION OF PRINTED LEARNING PROGRAMS, Heinz Kunert, Owner of Record: *Inventor,* Attorney or Agent: Stowell & Stowell, Ex. Gp.: 334, Requester: Peter Neubauer, Eustis, Fla.

3,936,257, Reexam. No. 90/000,002, Requested: July 1, 1981, Cl. 425/125, CLOSED STROKE MOLDING, Keith W. Christiansen, et al., Owner of Record: *Chicago Rawhide Mfg. Co., a Corp. of Illinois,* Attorney or Agent: James T. FitzGibbon, Ex. Gp.: 147, Requester: Federal-Mogul Corp., Detroit, Mich.

3,952,776, Reexam. No. 90/000,005, Requested: July 1, 1981, Cl. 138/39, FLUID FLOW DEVICE, James F. Eversole, et al., Owner of Record: *Dresser Industries, Inc.,* Attorney or Agent: Arthur G. Connolly, et al., Ex. Gp.: 243, Requester: Fitzpatrick, Cella, et al., New York, N.Y.

3,986,378, Reexam. No. 90/000,003, Requested: July 1, 1981, Cl. 72/38, METHOD OF REDUCTION OF AN OXIDIZED SURFACE OF COPPER OR ITS ALLOYS, Vladimir Yakovlevich Alekhin, et al., Owner of Record: *Inventor,* Attorney or Agent: Holman & Stern,

Ex. Gp.: 321, Requester: Southwire Co., Carrollton, Ga.

4,092,776, Reexam. No. 90/000,007, Requested: July 1, 1981, Cl. 30/253, CUTTING TOOL, William C. Ferguson, Owner of Record: *Cooper Industries, Inc.,* Attorney or Agent: Jacobs and Jacobs, Ex. Gp.: 323, Requester: Jacobs and Jacobs, New York, N.Y.

4,103,753, Reexam. No. 90/000,014, Requested: July 1, 1981, Cl. 180/257, MANUALLY SHIFTABLE PLANETARY GEARSET, John William Holdeman, Owner of Record: *Borg Warner Corp.,* Attorney or Agent: Julian Schachner, et al., Ex. Gp.: 316, Requester: Borg Warner Corp., Chicago, Ill.

4,104,156, Reexam. No. 90/000,001, Requested: July 1, 1981, Cl. 209/521, DETACHABLE SLING LET-DOWN APPARATUS FOR LUMBER SORTER, John K. Fletcher, Owner of Record: *Harvey Engineering & Mfg. Corp., a Corp. of Arkansas,* Attorney or Agent: John R. Walker, III, Ex. Gp.: 311, Requester: Lumber Systems, Inc., Portland, Ore.

4,117,195, Reexam. No. 90/000,009, Requested: July 1, 1981, Cl. 428/379, MANUFACTURE OF EXTRUDED PRODUCTS, Peter Swarbrick, et al., Owner of Record: *BICC Ltd., Etabblissements Maillfer S.A.,* Attorney or Agent: Buell, Blenko & Ziesenheim, Ex. Gp.: 164, Requester: Klein and Vibber, New York, N.Y.

4,142,926, Reexam. No. 90/000,008, Requested: July 1, 1981, Cl. 148/187, SELF-ALIGNING DOUBLE POLYCRYSTALLINE SILICON ETCHING, William L. Morgan, Owner of Record: *Intel Corp.,* Attorney or Agent: Edwin H. Taylor, Ex. Gp.: 111, Requester: Lyon and Lyon, Washington, D.C.

4,144,212, Reexam. No. 90/000,012, Requested: July 1, 1981, Cl. 260/29.7H, AIR-CURING COPOLYMER LATICES, Seymour M. Linder, et al., Owner of Record: *Alcolac, Inc.,* Attorney or Agent: George L. Tone, Ex. Gp.: 144, Requester: James Waldron, Washington, D.C.

4,231,383, Reexam. No. 90/000,006, Requested: July 1, 1981, Cl. 137/1, METHOD FOR CONTROLLING MASS FLOW RATE, James F. Eversole, Owner of Record: *Dresser Industries, Inc.,* Attorney or Agent: Richard M. Beck, Ex. Gp.: 341, Requester: Fitzpatrick, Cella, et al., New York, N.Y.

4,232,619, Reexam. No. 90/000,016, Requested: July 2, 1981, Cl. 112/417, LIFTING LOOP, Bengt Evert Lindahl, Owner of Record: *Svensk Lasthantering Bengt Lindahl,* Attorney or Agent: J. King Harness, et al., Ex. Gp.: 353 Requester: Holman & Stern Chartered, Washington, D.C.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before Sept. 8, 1981:

Clark, Conrad J., 5513 N. 9th Rd., Arlington, Va. 22205
delos Reyes, Ben W., 13136 Morning Spring La., Fairfax, Va. 22033
Favreau, Richard E., 5628 Overly Dr., Alexandria, Va. 22310
Miller, Lawrence O., 404 Monticello Blvd., Alexandria, Va. 22305
Vaughn, Irving, P.O. Box 4665, Washington, D.C. 20020

LUTRELLE F. PARKER
July 7, 1981 *Chairman, Committee on Enrollment.*

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" sections of the Official Gazettes of June 9, 23, and 30, 1981, and July 7, 1981, were assigned, prematurely, to published marks for which the opposition period had not yet run:

TMOG June 9, 1981	TMOG June 23, 1981	TMOG June 30, 1981	TMOG July 7, 1981
1,157,116	1,157,845	1,158,827	1,159,641
	1,158,005	1,158,828	1,159,663
	1,158,319	1,158,829	1,159,839
	1,158,571	1,158,830	1,159,879
		1,158,832	1,159,901
		1,158,833	1,160,063
		1,158,834	1,160,070
		1,158,835	1,160,094
		1,158,841	1,160,112
		1,158,842	1,160,286
		1,158,843	1,160,412
		1,158,844	1,160,448
		1,158,922	
		1,158,960	

Consequently, certificates of registration bearing the above-identified numbers were not issued on the dates indicated, and these registration numbers have been vacated.

MARGARET M. LAURENCE,
July 10, 1981 *Assistant Commissioner for Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Aug. 4, 1981

Re. 30,576	4,243,075	4,256,883	4,264,817
3,674,144	4,243,357	4,259,295	4,265,069
3,966,751	4,243,615	4,259,390	4,265,081
3,998,827	4,243,627	4,259,400	4,265,186
4,001,502	4,244,071	4,259,436	4,265,374
4,044,148	4,244,187	4,259,564	4,265,665
4,097,261	4,244,679	4,259,567	4,265,933
4,133,779	4,245,330	4,259,569	4,265,956
4,165,996	4,245,627	4,259,618	4,266,125
4,182,732	4,246,327	4,259,729	4,266,145
4,200,795	4,247,121	4,259,943	4,266,185
4,205,206	4,247,144	4,259,981	4,266,701
4,210,123	4,247,402	4,260,098	4,266,822
4,214,158	4,249,137	4,260,338	4,266,840
4,214,750	4,249,436	4,260,363	4,266,931
4,217,148	4,249,500	4,260,432	4,267,137
4,218,194	4,250,129	4,260,473	4,267,481
4,220,574	4,250,562	4,260,614	4,267,680
4,220,661	4,250,807	4,260,616	4,268,380
4,222,997	4,251,513	4,260,884	4,268,538
4,223,576	4,252,691	4,261,104	4,268,553
4,225,517	4,252,736	4,261,356	4,268,744
4,225,682	4,252,772	4,261,426	4,268,792
4,226,421	4,253,021	4,261,429	4,268,906
4,227,644	4,253,355	4,261,456	4,268,914
4,227,652	4,253,468	4,261,527	4,270,475
4,228,964	4,253,788	4,261,556	4,270,665
4,229,286	4,253,836	4,261,755	4,270,669
4,230,412	4,254,044	4,261,760	4,270,694
4,233,857	4,254,125	4,261,811	4,270,749
4,234,271	4,254,418	4,261,875	4,270,912
4,234,663	4,254,698	4,261,950	4,270,944
4,237,063	4,255,019	4,262,760	4,271,049
4,237,448	4,255,359	4,262,845	4,271,447
4,238,530	4,256,022	4,263,712	4,271,510
4,240,724	4,256,166	4,264,230	4,271,940
4,240,760	4,256,176	4,264,444	
4,241,207	4,256,615	4,264,580	
4,241,697	4,256,856	4,264,788	

Disclaimers

4,139,645.—*Raymond E. Werner,* Cincinnati, Ohio COLORING AGENTS FOR EDIBLE MATERIALS. Patent dated Feb. 13, 1979. Disclaimer filed Apr. 7, 1981, by the assignee, *Sterling Drug, Inc.*

Hereby enters this disclaimer to claims 1 to 6 inclusive, and claim 10 of said patent.

3,822,838.—*Richard A. Butler, Jr.,* Chestnut Hill and *Jack T. Hansen,* Needham, Mass., *August R. Rump,* Chicago, Ill., and *Rudy R. Arendt,* South Wales, N.Y. WEB HANDLING APPARATUS. Patent dated July 9, 1974. Disclaimer filed May 14, 1981, by the assignee *Butler Greenwich, Inc.*

Hereby enters this disclaimer to claims 1 to 5 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
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	Sacramento: California State Library	(916) 323-4572
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(404) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 27, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-15-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-03-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	10-01-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-23-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	9-24-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director .... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	3-05-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-13-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during June 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,134,981 to 3,139,621, inclusive

Plant Patents ..... Numbers 2,407 to 2,415, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 4, 1981

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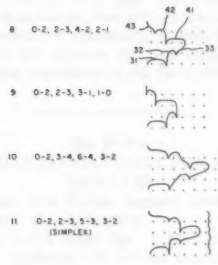
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,901
SINGLE-BAR WARP-KNIT FABRICS

Bharat J. Gajjar, 1721 Gunning Dr., Forest Hills Park, Wilmington, Del. 19803

Filed Feb. 29, 1980, Ser. No. 125,856
Int. Cl.[3] D04B *21/00*
U.S. Cl. 66—195
4 Sheets Drawing. 18 Pages Specification



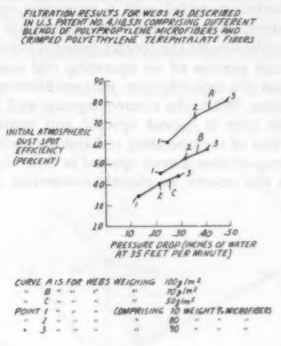
A single guide-bar, warp-knit crepe fabric is provided. The fabric has a repeating stitch pattern that includes at least two stitches selected from the group consisting of a three-needle open stitch, a two-needle open stitch and a one-needle open or closed stitch. The floats of the repeat pattern are no longer than four-needle spacings. Four-course repeating patterns are preferred, especially one having a 0-2, 2-3, 4-2, 2-1 repeat.

T100,902
USES FOR MICROFIBER-BASED WEBS

Edward R. Hauser, P.O. Box 33427, Saint Paul, Minn. 55133

Filed Dec. 29, 1980, Ser. No. 220,433
Int. Cl.[3] B01D *23/00*
U.S. Cl. 210—348
1 Sheets Drawing. 7 Pages Specification

Microfiber webs and composite webs comprising blends of microfibers and crimped bulking fibers have a variety of uses, including use as thermal insulation for garments as well as various structures such as buildings, tents, refrigerator cabinets, or window shades; acoustic insulation; light weight fillers; various structural members, such as battery separators; filters; and applicators, cloths and wipes. For these and other uses the


FILTRATION RESULTS FOR WEBS AS DESCRIBED IN U.S. PATENT NO. 4,118,531 COMPRISING DIFFERENT BLENDS OF POLYPROPYLENE MICROFIBERS AND CRIMPED POLYETHYLENE TEREPHTHALATE FIBERS
INITIAL ATMOSPHERIC DUST SPOT EFFICIENCY (PERCENT)
PRESSURE DROP (INCHES OF WATER AT 35 FEET PER MINUTE)
CURVE A IS FOR WEBS WEIGHING 100 g/m²
B " " " " 70 g/m²
C " " " " 50 g/m²
POINT 1 " " " COMPRISING 10 WEIGHT % MICROFIBERS
2 " " " 80 " " "
3 " " " 90 " " "

webs may be combined with other articles such as films or fabrics or other kinds of insulating or lofty webs.

T100,903
PREPARATION OF NITROGEN FERTILIZERS FROM OXALATE ESTERS PREPARED BY THE OXIDATIVE CARBONYLATION OF ALCOHOLS OVER NOBLE METAL CATALYSTS UTILIZING REGENERABLE 2,5-CYCLOHEXADIENE-1,4-DIONE OXIDANTS

Robert J. Radel, 1833 W. Tannehill, and Jack M. Sullivan, 106 Patsy Dr., both of Florence, Ala. 35630

Filed Apr. 4, 1980, Ser. No. 137,204
Int. Cl.[3] C07C *50/04, 67/36, 102/00, 102/06*
U.S. Cl. 260—396 R
No Drawing. 44 Pages Specification

Preparation of oxalate esters by the oxidative carbonylation of alcohols with carbon monoxide in the presence of a catalytic amount of a platinum group metal salt with or without a corresponding metal oxidant salt and an optionally substituted quinone. High yields of isolated dialkyl oxalates are obtained by regulating temperature and carbon monoxide pressure and by maintaining essentially anhydrous conditions. In addition, high yields of the hydroquinones (1,4-dihydroxybenzenes) are recovered. Preparation of oxamide, a potential slow-release nitrogen fertilizer via the oxidative carbonylation of alcohols with carbon monoxide in the presence of a catalytic amount of a platinum group metal salt and an optionally substituted quinone followed by ammoniation of the filtered reaction mixture at room temperature, or below. High yields of isolated oxamide were obtained by regulating the temperature and pressure during the oxidative carbonylation and maintaining essentially anhydrous conditions throughout the process. In addition, nearly quantitative yields of the hydroquinones (1,4-dihydroxybenzenes) are recovered for recycle along with the solvents.

A process for the preparation of nitrogen fertilizers, especially oxamide, either indirectly or directly from oxalate esters, including the regeneration of the quinone oxidant utilized in the formation of the above esters.

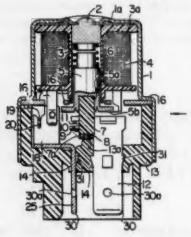
T100,904

PLUNGER TYPE ELECTROMAGNETIC RELAY

Siyoutaro Kawamura, 55, Tonokicho-2-chome, Toyokawa-shi, Japan

Filed Aug. 23, 1979, Ser. No. 69,077
Claims priority, application Japan, Sep. 29, 1978, 53-134485
Int. Cl.³ H01H *67/02*
U.S. Cl. 335—131
2 Sheets Drawing. 13 Pages Specification

A plunger type electromagnetic relay includes a contact spring provided with a moving contact at one end thereof and having the other end rotatably fitted to a terminal, and the contact spring is further provided with a projection on the central portion thereof. When an electromagnetic coil is not energized, the projection on the contact spring is urged downward by the botton portion of an operating rod attached to the lower portion of a movable core, thus establishing a normally-open condition. When the electromagnetic coil is energized, the movable core is moved upward and consequently the bottom portion of the operating rod and the projection of the contact spring are also moved upward in their engaged condition. When this occurs, an electric connection is completed between the moving contact at one end of the contact spring and a fixed contact provided in a relay housing. the contact structure comprising the bottom portion of the operating rod



and the projection of the contact spring reduces the assembly errors due to the automatic assemblage of electromagnetic relays of the same type.

REISSUES

AUGUST 4, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,693
PROCESS FOR INCREASING THE FILLING CAPACITY OF TOBACCO

James D. Fredrickson, Winston-Salem, N.C., assignor to Reynolds Leasing Corporation, Jacksonville, Fla.

Original No. 3,524,451, dated Aug. 18, 1970, Ser. No. 720,406, Apr. 10, 1968. Application for reissue Mar. 17, 1975, Ser. No. 558,674

Int. Cl.³ A24B *3/18*

U.S. Cl. 131—296 **11 Claims**

1. A process for increasing the filling capacity of tobacco which comprises contacting tobacco with a sufficient quantity of a volatile organic liquid to impregnate same, thereafter without substantially increasing the pressure rapidly passing a gas into contact with said impregnated tobacco, said gas being heated to a temperature of at least 30° F. above the boiling point of said liquid at the gas contacting pressure, whereby said liquid in the tobacco is essentially completely and rapidly vaporized within said tobacco and said tobacco is expanded and separating the vaporized liquid from the tobacco in the vapor state.

Re. 30,694
FLEXIBLE SKIRT COMPONENTS FOR AIR CUSHION VEHICLES

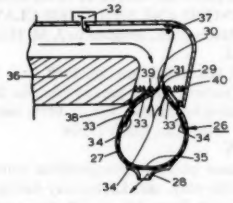
Lavis A. H. Riddle, East Cowes, England, assignor to Westland Aircraft Limited, Yeovil, England

Original No. 3,375,894, dated Apr. 2, 1968, Ser. No. 482,343, Aug. 25, 1965. Application for reissue Aug. 28, 1978, Ser. No. 937,592

Claims priority, application United Kingdom, Aug. 28, 1964, 35257/64

Int. Cl.³ B60V *1/16*

U.S. Cl. 180—128 **2 Claims**



17. In a vehicle of the type adapted for hovering over a surface on at least one cushion of pressurised gaseous fluid, said vehicle comprising a rigid base structure and a flexible skirting assembly attached to at least a portion of the periphery of the base structure, the improvement wherein the flexible skirting assembly comprises essentially a substantially one piece sheet of flexible substantially fluid impermeable material forming a single continuous length extending downwardly between a first line on the undersurface of said rigid base structure and then upwardly to a substantially coplanar second line on the undersurface of said rigid base structure spaced inwardly from said first line of attachment to form a loop in vertical cross section that is free from internal rigid restraining and bracing members, the space being encompassed by said sheet being inflatable outwardly away from said rigid base structure, ports disposed in the lower portion of the loop formed by said flexible material, and flexible nozzle extensions cooperating with said ports, said flexible nozzle extensions comprising flexible walls depending from the loop formed by the flexible material, wherein the loop formed by the flexible material is of woven fabric having weft and warp threads, and wherein the weft threads have been removed from the region of the flexible material in which the ports are provided, and the remaining warp threads are gathered together to form bunched tension members which act as webs between adjacent ports.

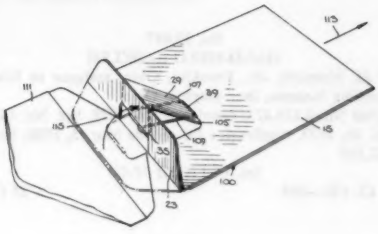
Re. 30,695
COLLAPSIBLE EASEL SUPPORT

Felix Transport, 98 Riverside Dr., New York, N.Y. 10024

Original No. 4,149,630, dated Apr. 17, 1979, Ser. No. 792,552, May 2, 1977. Application for reissue Mar. 31, 1980, Ser. No. 135,368

Int. Cl.³ B65D *5/52*

U.S. Cl. 206—45.24 **18 Claims**



1. A collapsible easel support means for supporting a display on a surface at an angle comprising:

a back panel having a bottom edge;

a stay flap hinged to said back panel along said bottom edge to rest on said surface;

two slits extending across said bottom edge from the interior of said stay flap to the interior of said back panel;

a first score in said stay flap extending between said two slits;

a second score in said back panel extending between said two slits;

a third score between said first and second scores extending between said two slits;

said first and third scores defining a stay panel and said second and third scores defining a support panel;

said stay panel folded into co-planar contact with said stay flap when said stay flap makes a predetermined angle of less than 90° with said back panel, whereby said support panel between said back panel and said stay flap supports said back panel at said predetermined angle to said surface when said stay flap rests on said surface.

Re. 30,696
SOLDERING FLUX COMPOSITION

Gordon F. Arbib, and Wallace Rubin, both of Hemel Hempstead, England, assignors to Multicore Solders Limited, Hertfordshire, England

Original No. 4,092,182, dated May 30, 1978, Ser. No. 795,635, May 10, 1977. Application for reissue May 19, 1980, Ser. No. 150,945

Claims priority, application United Kingdom, Jun. 11, 1976, 24410/76

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—23 **13 Claims**

1. A flux composition, comprising, as essential constituents:

(1) at least one ester derived from a polyhydric alcohol and at least one saturated or unsaturated fatty acid or *monocarboxylic* mononuclear aromatic acid, *said ester having a molecular weight of at least 300*; and

(2) at least one additional constituent selected from:

(a) organic acids which are substantially soluble in said ester of a polyhydric alcohol when in a molten condition;
(b) flux activating agents; and
(c) flux residue hardening agents, said ester being present in an amount of at least 25% by weight based on the total weight of constituents (1) and (2).

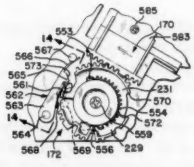
Re. 30,697
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Original No. 4,125,421, dated Nov. 14, 1978, Ser. No. 817,086, Jul. 18, 1977. Application for reissue Mar. 5, 1980, Ser. No. 127,345

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—384 **23 Claims**



18. Hand-held apparatus for printing and applying pressure sensitive labels releasably carried on a web of supporting material, comprising: a frame having a handle, an actuator disposed at the handle and movable between an initial position and an actuated position, a platen, a print head, means mounting the print head on the frame for movement into and out of printing cooperation with the platen, means disposed adjacent the platen for delaminating printed labels from the supporting material web, means for applying printed labels, means engageable with the web for advancing the web, means responsive to movement of the actuator for moving the print head into printing cooperation with the platen and for thereafter moving the web advancing means to advance the just printed label into label applying relationship with respect to the applying means, the moving means including a first gear section coupled to the actuator, a second gear section meshing with the first gear section, a spring for driving the print head in response to movement of the second gear section, a third gear section coupled to the second gear section, a fourth gear section coupled to the print head and meshing with the third gear section, means providing relative movement between the second gear section and the print head, actuation of the actuator effecting loading of the spring when the actuator is moved from the initial position toward the actuated position, means for preventing movement of the print head toward the platen during movement of the actuator from its initial position toward its actuated position until the actuator has moved through a predetermined distance, and means responsive to movement of the actuator through a predetermined distance for releasing the print head into printing cooperation with the platen.

Re. 30,698
HYDRAULIC FLUIDS COMPRISING ORTHOSILICATE ESTERS

John S. Elliott; Gerald J. J. Jayne; Herbert F. Askew, and Colin J. Harrington, all of Swindon, England, assignors to Castrol Limited, Wiltshire, England

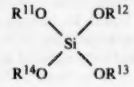
Original No. 4,051,053, dated Sep. 27, 1977, Ser. No. 679,440, Apr. 22, 1976. Continuation of Ser. No. 431,889, Jan. 9, 1974, abandoned. Application for reissue Oct. 10, 1979, Ser. No. 950,047

Claims priority, application United Kingdom, Jan. 10, 1973, 01409/73

Int. Cl.³ C07F *7/04;* **C09K** *3/00*

U.S. Cl. 252—78.3 **5 Claims**

9. [A compound according to claim **8**] *An orthosilicate ester having the general formula:*



wherein R^{11} is a t-butyl group and R^{12}, R^{13} and R^{14} are triethylene glycol monomethyl ether residues; R^{11} is a neopentyl group and R^{12}, R^{13} and R^{14} are tripropylene glycol monomethyl ether residues; R^{11} and R^{14} are t-butyl groups and R^{12} and R^{13} are dipropylene glycol monomethyl ether residues; R^{11} and R^{14} are t-butyl groups, R^{12} is a dipropylene glycol monomethyl ether residue and R^{13} is a triethylene glycol monomethyl ether residue; R^{11} is a t-butyl group and R^{12}, R^{13} and R^{14} are dipropylene glycol monomethyl ether residues; R^{11} and R^{14} are t-butyl groups and R^{12} and R^{13} are triethylene glycol monomethyl ether residues; R^{11} and R^{14} are t-butyl groups and R^{12} and R^{13} are tripropylene glycol monomethyl ether residues; or R^{11} is a t-butyl group and R^{12}, R^{13} and R^{14} are tripropylene glycol monomethyl ether residues.

Re. 30,699
POLYURETHANES CONTAINING AMINO ORGANOSILANE MODIFIED CLAY

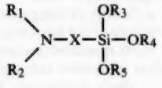
Joseph Iannicelli, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Original No. 3,390,120, dated Jun. 25, 1968, Ser. No. 480,090, Aug. 16, 1965. Continuation-in-part of Ser. No. 269,695, Apr. 1, 1963. Application for reissue Apr. 2, 1979, Ser. No. 26,381

Int. Cl.³ C08L *75/04*

U.S. Cl. 260—37 N **4 Claims**

1. A polyurethane polymer composition containing as a filler, modified kaolin clay, said kaolin clay *having been* modified *by treatment* with from 1% to 3% by weight with an aminoorganosilane of the formula



wherein R_1 is selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, and alkaryl, R_2 is selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, and alkylaryl, R_3 is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl, and lower arylalkyl, R_4 is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl, and lower arylalkyl, R_5 is selected from the group consisting of hydrogen, lower alkyl, aryl, lower alkylaryl, and lower arylalkyl, and X is selected from the group consisting of alkylene, arylene, alkylarylene, arylalkylene, cycloalkylene, cycloalkylene containing secondary amino nitrogen and cycloalkylene containing tertiary amino nitrogen, *the modification of said kaolin clay being carried out by spray drying kaolin slurries having one or more of said amonoor-*

ganosilanes dispersed therein, said spray drying effecting a uniform distribution of said aminoorganosilane on the kaolin.

Re. 30,700

INSECTICIDAL COMPOSITIONS FOR ULTRA LOW VOLUME APPLICATION

Heinz Frensch, Frankfurt am Main; Konrad Albrecht, Fischbach, and Klaus-Detlev Bock, Kelsterbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Original No. 3,996,375, dated Dec. 7, 1976, Ser. No. 536,362, Dec. 26, 1974. Application for reissue Jan. 12, 1979, Ser. No. 3,039

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1973, 2364894

Int. Cl.[3] **A01N** *43/24*

U.S. Cl. 424—276 **6 Claims**

1. Insecticidal compositions for ultra low volume (ULV) application which comprises

a. from 15 to 35 weight percent of 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepine-3-oxide;

b. from 60 to 84.5 weight percent of a solvent mixture consisting of 15 to 85 weight percent of a liquid ester formed from a monoalcohol of 1 to 12 carbon atoms and a monovalent or bivalent carboxylic acid of 2 to 10 carbon atoms, said ester containing at least 8 and a maximum of 12 carbon atoms in the case of an ester of a monovalent acid and at least 8 and a maximum of 32 carbon atoms in the case of esters of a bivalent acid and from 15 to 85 weight percent of an aromatic hydrocarbon consisting essentially of an alkyl substituted benzene of 9 to 11 carbon atoms or a 1- or 2-methyl substituted naphthalene having a boiling range of from 168° to 250° C.; and

c. from 0.5 to 5 weight percent of an epoxide selected from the group consisting of epichlorohydrin, epoxypropane, styrene oxide, phenyl epoxy-propane, and an epoxide of an unsaturated vegetable oil.

PLANT PATENTS

GRANTED AUGUST 4, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,756

WHITE ASH

William H. Collins, Circleville, Ohio, assignor to American Garden Cole, Inc., Circleville, Ohio

Filed Apr. 14, 1980, Ser. No. 140,012

Int. Cl.[3] **A01H** *5/12*

U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of white ash tree, *Fraxinus americana*, substantially as described and illustrated, characterized by a strong, sturdy, upright branching habit which forms a compact, oval to globe-shaped head.

PATENTS

GRANTED AUG. 4, 1981

ERRATA

For CLASS	See PATENT NO.
411–548	4,281,580
411–019	4,281,581
493–045	4,281,591
411–176	4,281,699
244–082	4,281,816
493–012	4,281,828
219–314	4,282,241
525–336	4,282,343
260–002	4,282,367
568–471	4,282,374
235–310	4,282,514
568–063	4,282,593

PATENTS

GRANTED AUGUST 4, 1981

GENERAL AND MECHANICAL

4,281,417

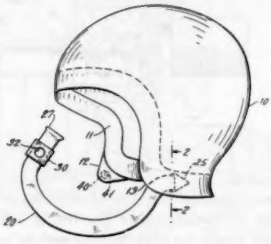
INFLATABLE WATERPROOF BATHING CAP

Michael Valentine, 78 Tower Rd., Pine Lakes, Wayne, N.J. 07470

Filed May 16, 1980, Ser. No. 150,307

Int. Cl.³ A42B *1/12*

U.S. Cl. 2—68 **1 Claim**



1. In a bathing cap of the type having an inflatable band portion and a tubular chin strap having a first end and a free end and the first end being connected to the inflatable band portion and through which the latter can be inflated, the improved means for attaching the free end of said chin strap to the cap comprising projecting means having a neck portion and a bulbous head portion attached to a region of the cap opposite the region where the first end of said tubular strap is attached, flexible sleeve means slidably mounted on said tubular chin strap, said flexible sleeve means having orifices on opposte sides thereof which are adapted to admit the bulbous head of the projecting portion whereby the free end of the strap may be attached to the projecting portion by forcing the head through said orifices.

4,281,418

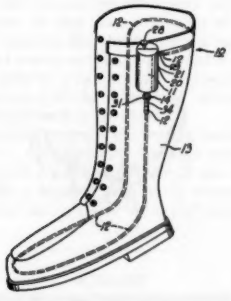
PORTABLE FURNACE FOR WEARING APPAREL

Stanley Cieslak, 14 Creek Rd., and Leonard K. Cieslak, 15 Creek Rd., both of McKees Rocks, Pa. 15136

Continuation-in-part of Ser. No. 875,815, Feb. 7, 1978. This application Jun. 18, 1979, Ser. No. 49,059

Int. Cl.³ A41D *19/00;* **A43B** *7/02;* **A41F** *7/00*

U.S. Cl. 2—160 **10 Claims**



1. A portable furnace for generating and circulating heat in wearing apparel or the like comprising a compact insulated case capable of being carried on a person and having a cavity therein and further adapted to be opened to receive slow burning solid fuel agglomerates in said cavity for combustion, a liquid reservoir in said case positioned for radiant heat transfer from ignited fuel agglomerates in said cavity to a liquid in said reservoir, a flexible liquid conduit having both ends thereof connected for circulation of the heated liquid from said reservoir through said conduit in a closed circuit adapted for circulation of heated liquid from said reservoir through said conduit, and pump means connected to said conduit for hand manipulation thereof to circulate heated liquid from said reservoir through said conduit on demand, said cavity having top and bottom walls and side walls with one side wall providing a heat exchanger for said radiant heat transfer, said side walls except said one side wall being insulated for prevention of heat transfer, said one heat exchanger side wall being lightly insulated on the inside such as to permit heat transfer through said one side wall from said cavity to said reservoir but at the same time prevent excessive moisture buildup on said one side wall which would otherwise be capable of extinguishing a solid fuel agglomerate under combustion in said cavity, and vent apertures in at least one of said top and bottom walls.

4,281,419

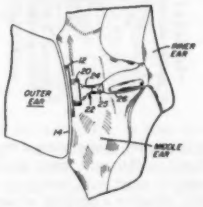
MIDDLE EAR OSSICULAR REPLACEMENT PROSTHESIS HAVING A MOVABLE JOINT

Harry T. Treace, Forest Hill, Tenn., assignor to Richards Manufacturing Company, Inc., Memphis, Tenn.

Filed Dec. 10, 1979, Ser. No. 101,774

Int. Cl.³ A61F *1/24, 1/18*

U.S. Cl. 3—1.9 **7 Claims**



1. In a middle ear ossicular replacement prosthesis having a head portion and a shaft portion, the improvement comprising:

a movable joint connecting said head portion and the captured end of said shaft portion to permit pivotal movement of said shaft portion relative to said head portion, said movable joint being a ball-and-socket joint which permits universal pivotal movement of said shaft portion relative to said head portion.

4,281,420

BONE CONNECTIVE PROSTHESES ADAPTED TO MAXIMIZE STRENGTH AND DURABILITY OF PROSTHESES-BONE CEMENT INTERFACE; AND METHODS OF FORMING SAME

Simon Raab, 5872 Westbury Ave., Montreal, Quebec H3W 2W9, Canada

Filed Jun. 5, 1979, Ser. No. 45,657

Claims priority, application United Kingdom, Feb. 15, 1979, 05445/79

Int. Cl.³ A61F *1/24;* **A01N** *1/02*

U.S. Cl. 3—1.912 **23 Claims**

1. A process comprising joining a prosthesis to bone by applying bone cement to a polymethylmethacrylate film fixedly adhered to a prosthetic element, said prosthesis having been prepared by the steps of:

treating said prosthetic element to eliminate any weak boundary layer; applying polymethylmethacrylate to said

treated surface to form a film thereon; and thereafter annealing said polymethylmethacrylate film.

4,281,421

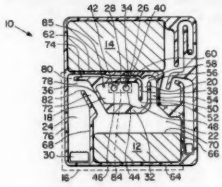
PASSIVE DOSING DISPENSER WITH IMPROVED HYPOCHLORITE CAKE

John D. Nyquist; David J. Kitko, and Richard F. Stradling, Jr., all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 12, 1979, Ser. No. 19,547

Int. Cl.[3] E03D *9/02*

U.S. Cl. 4—228 **11 Claims**



1. In a dosing dispenser comprising a reservoir; a cake containing hypochlorite within said reservoir; and means to allow a volume of water to enter said reservoir contacting and immersing said cake, dissolve a portion of said hypochlorite and be contained therein for release at a later time; the improvement wherein said cake comprises an effective amount of a source of hypochlorite and at least one component which when exposed to water is capable of forming an insoluble, porous matrix which entrains and displaces a portion of said water in said reservoir while allowing said hypochlorite to gradually dissolve, whereby to prevent an increase in the pourable fluid capacity of said reservoir as the hypochlorite in said cake is exhausted.

4,281,422

SWIMMING POOL WINTERIZING DISCONNECT UNIT

Louis R. Simonelli, 40 Diaz St., Stamford, Conn. 06902

Filed Sep. 28, 1979, Ser. No. 80,156

Int. Cl.[3] E04H *3/18*

U.S. Cl. 4—496 **1 Claim**

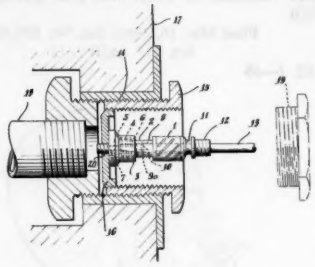
1. A disconnect unit for the isolation of the aqueous contents of a swimming pool from pump lines running into said pool which comprises:

(a) a pool inlet fitting having a check valve permanently mounted therein adapted to having inserted within the check valve at its distal end a compressed air nipple,

(b) said fitting further adapted at its proximal end to be inserted into the terminal end of a pump line or lines which feed the pool with water and,

(c) said fitting containing a spring mechanism which when compressed opens the passageway of the valve for the passage of water or air, and when relaxed, closes the passageway for water or air into the passageway and wherein,

(d) said fitting is adapted by means of a plurality of ball bearings positioned in the wall of the inner sleeve **2** which pop out to fit into the nipple locking grove **10** to hold the



valve open to permit the flow of air or water peripherally about the circumference of the fitting when the compressed air nipple has been inserted and the spring mechanism compressed, and to halt the flow when the nipple has been removed and the interior spring mechanism has been relaxed.

4,281,423

FOAM BATHING APPARATUS

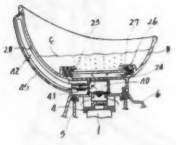
Masao Fukunaga, Matsubara; Fusao Niino, Suita, and Hiroshi Nonoguchi, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 24, 1980, Ser. No. 143,345

Claims priority, application Japan, Apr. 27, 1979, 54-053107; Apr. 27, 1979, 54-053108

Int. Cl.[3] A61H *33/06*

U.S. Cl. 4—537 **12 Claims**



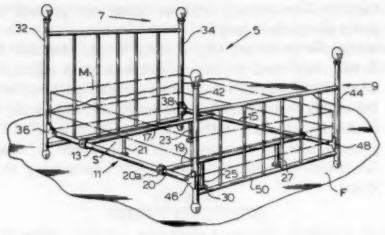
1. In a foam bathing apparatus having a main body including blower means, a container mounted on the main body for containing a bath, a porous body disposed at an inner bottom portion of the container and passage means for feeding air from the blower means to the porous body, the improvement comprising a pressure chamber provided within the main body and positioned downstream from the blower means immediately

adjacent thereto, and means for adjusting the pressure of the chamber.

4,281,424
BED FRAME

Richard A. Singer, Oak Brook, and Gerry D. Welton, Morton, both of Ill., assignors to Berkshire Furniture Co., Inc., Chicago, Ill.

Filed Nov. 23, 1979, Ser. No. 96,664
Int. Cl.³ A47C *19/00*
U.S. Cl. 5—282 R **2 Claims**



1. A mounting clamp to attach a cylindrical vertical supporting leg of a headboard or a footboard to an end of a tubular bed frame member comprising:

a pair of shaped, rigid, spaced apart, side members, each said spaced apart side member is joined, along a first elongated side, to a substantially concave, elongated, rigid, three sided sheet member;

a first U-shaped bracket with a central region adapted to slide within the end of the tubular bed frame member and curved side members adapted to simultaneously contact opposite interior curved regions thereof, said first bracket is fixedly attached to a central region of said concave three-sided member, a hole in said central region of said first U-shaped bracket;

a second U-shaped bracket adapted to fit within and be fixedly attached to first and second interior regions of the tubular bed frame member adjacent the end thereof, said bracket has a threaded hole centrally located therein;

a threaded means for removably connecting, said threaded means has a threaded end that is adapted to pass through said hole in said first U-shaped bracket and engage said threaded hole in said second U-shaped bracket thereby drawing said first U-shaped bracket into the end of the tubular bed frame member until selected regions of the end of the tubular member are tightly forced against selected regions of said central portion of said concave three-sided member thereby forming a rigid connection between said clamp and the tubular bed frame member;

said concave member when oriented substantially vertically is adapted to receive the cylindrical, vertical, supporting leg of the headboard or footboard;

means for retaining to retain the vertical support leg within said concave, elongated sheet member and to distort the vertical support leg slightly so that at least three selected regions of the cylindrical support leg contact corresponding regions on said concave, elongated, rigid, sheet member.

4,281,425
NEONATAL FLOTATION PAD

Annella E. Jacobs, 3648 S. Margarita Way, Las Vegas, Nev. 89103

Filed Aug. 6, 1979, Ser. No. 63,790
Int. Cl.³ A47C *27/08;* **A61G** *11/00*
U.S. Cl. 5—455 **9 Claims**

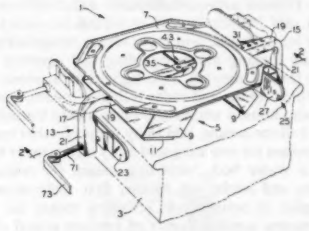
1. A flotation pad for premature infants comprises a unitary liquid-impermeable, flexible bladder having a plurality of adjacent separate fluid-containing sealed transverse compartments, wherein each compartment is in overlapping relationship with

the next adjacent compartment in the amount of at least 10% of the length of each compartment, such that when the pad is tilted, the thickness thereof remains relatively uniform.

4,281,426
BOAT SEAT MOUNTING UNIT

Denis S. Moeser, Clayton, Mo., assignor to Leisure Products, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 804,995, Jun. 9, 1977, Pat. No. 4,122,571. This application May 26, 1978, Ser. No. 909,378
Int. Cl.³ B63B *29/00*
U.S. Cl. 9—7 **21 Claims**

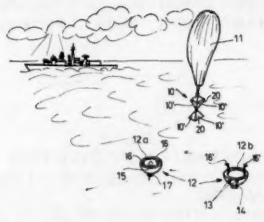


1. A unit for mounting a seat on a boat thwart or the like, said unit comprising a base adapted to rest on the thwart and to have said seat secured thereto, means carried by the base for clamping it on the thwart, said clamping means comprising a pair of arms extending outwardly from opposite sides of the base, a clamping shoe at the outer end of each arm, said shoes being engageable with opposite sides of the thwart for clamping the base thereto, rough adjustment means for quickly adjusting the shoes to space them apart a distance somewhat greater than the width of the thwart for application of the unit to the thwart, fine adjustment means for precisely adjusting the shoes to draw them into clamping engagement with opposite sides of the thwart, said arms being readily movable in the base between an unfolded clamping position in which the shoes are engageable with said thwart and a folded portable position, and means for locking the arms in said unfolded position, said arms being telescopically fitted together for slidably adjusting the arms relative to one another, said rough adjustment means comprising a snap fastener assembly for snap-fastening the arms in any one of a plurality of predetermined adjusted positions, said assembly comprising a series of openings in one arm spaced along the length of the arm, a detent on the other arm, and spring means on said other arm for biasing the detent into any selected opening, said spring means comprising a leaf spring extending lengthwise of said other arm, said spring being secured at one end to said other arm and having said detent at its other free end adapted to snap into any selected opening, said spring being held on said other arm by a clip at said one end of the spring, said clip being of separate construction from the spring and the latter having a boss thereon receivable in a hole in said other arm for preventing the spring from sliding along the arm.

4,281,427
WARNING AND SIGNALLING DEVICE, ESPECIALLY FOR MARITIME PURPOSES

Claus Petters, Hamburg, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 95,991
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851588
Int. Cl.³ B63B *21/52*
U.S. Cl. 9—9 **10 Claims**

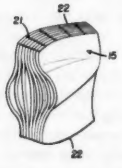


1. A warning and signalling apparatus particularly for maritime use comprising: a first buoyancy element comprising collapsible balloon means; collapsible radar reflector means coupled to said balloon means; a second buoyancy element comprising buoy means, said buoy means comprising opening members and locking means coupling said opening members together to form a buoyant watertight compartment for housing said balloon means and radar reflector means; gas generating means also housed within said buoy means for inflating the collapsible balloon means; said buoy means further comprising anchoring means for retaining said buoy means on or below the surface of a water body, releasing means for releasing said buoy means and anchoring means, first underwater sensor means coupled to actuate said releasing means for releasing said buoy means sensing signals of predetermined character, second sensor means coupled to actuate said locking means for opening of the opening members of said buoy means at the surface of a water body upon release of said buoy means, said second sensor means being coupled to actuate said gas generator means for inflating said balloon means upon opening of the buoy means at the water surface, whereby said balloon means lifts the radar reflector means to a height over the water surface sufficient for radar detection after sensing of signals of said predetermined character.

4,281,428
FLOATATION PADS FOR LIFE-SAVING VESTS

Morris Rochlin, 1220 Morse St., Royal Oak, Mich. 48068

Filed Feb. 19, 1980, Ser. No. 122,239
Int. Cl.³ B63C *9/10*
U.S. Cl. 9—342 **2 Claims**



1. In a floatation garment, such as a life preserver vest, having walls for fitting around and for being worn by the human body for increasing the water floatation ability thereof, and including relatively thick, foam plastic pads secured to the garment walls, the improvement comprising:

each of said pads being formed of numerous, relatively thin, separate, resilient, flexible, closed cell, polyethylene, foamed plastic sheets arranged in a stack, with one sheet upon another, in face to face contact and all of the sheets being of the same size, so that their edges are in alignment;

at least one edge portion of each sheet being secured to adjacent sheet edge portions of the other sheets in a pad by heat welding so that the sheets are secured together as a unitary pad along at least one edge of the pad, while the sheet portions between the sheet edge are free of positive securement to each other, said heat welding being applied by pressing a heated wire along spaced apart lines upon the one edge of the pad to form spaced apart heat weld lines on said one edge whereby said sheets are secured in face to face contact without being compressed at any point along their lengths;

wherein the pads are like unitary blocks, but are highly flexible and tend to closely drape around adjacent portions of the wearer's body, and the pad portions between the edges thereof tend to be puffy and separately move one from another, rather than to form a tightly compressed unit, to thereby tend to maintain its maximum floatation volume while resiliently conforming to body shape.

4,281,429
METHOD FOR MAKING FASTENERS

Jaak S. Van den Sype, Scarsdale, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 93,015
Int. Cl.³ B21K *1/46*
U.S. Cl. 10—27 E **10 Claims**

1. A method for making a fastener having a head and a shank from a slug consisting essentially of an AISI 200 or 300 series stainless steel having an Md_{30} temperature in the range of about 50° C. to about 50° C. comprising the following steps:

(a) cooling the slug to a temperature of at least about 50° C. below the Md_{30} temperature of the stainless steel minus 30° C.;

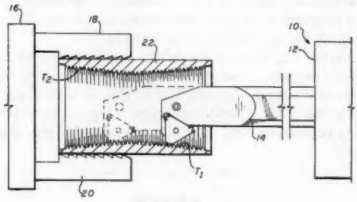
(b) extruding a portion of the cooled slug to provide the shank while simultaneously heating the remaining portion of the cooled slug to a temperature in the range of about Md_{30} minus 30° C. to about 500° C.; and

(c) upsetting the heated portion to provide the head.

4,281,430
METHOD AND APPARATUS FOR MACHINING PIPE COLLARS

Dieter H. Hellnick, Houston, Tex., assignor to Jo-Way Tool Company, Inc., Houston, Tex.

Filed Aug. 20, 1979, Ser. No. 67,902
Int. Cl.³ B23G *1/22*
U.S. Cl. 10—101 R **6 Claims**



1. A method of machining a cylindrical workpiece having coaxial opposed first and second tapered internal surfaces to form an internally threaded pipe collar having coaxial, oppositely tapered first and second threaded surfaces, said method comprising:

providing a threading tool having a single thread cutting tooth and having a first thread topping disposed on one

side of said thread cutting tooth and a second thread topping disposed on the opposite side of said thread cutting tooth, said first and second thread toppings defining a line tangential thereto;

continuously rotating said pipe collar to be internally threaded about the longitudinal axis thereof;

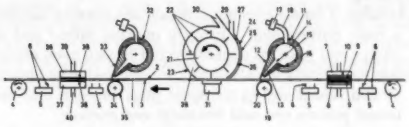
moving said threading tool in one linear direction along said first tapered internal surface of said collar in thread cutting manner with said tangential line parallel to the axis of said collar and with said tooth cutting the thread groove and said first thread topping forming the topping of said first tapered thread, and with said second thread topping remaining clear of said topping of said first tapered thread; and

moving said threading tool in said one linear direction along said second tapered internal surface of said collar in thread cutting manner with said tangential line parallel to the axis of said collar and with said tooth cutting the thread groove and said second thread topping forming the topping of said second tapered thread, and with said first thread topping remaining clear of said topping of said second tapered thread.

4,281,431
SHEET CLEANING

Jean Nierlich, Antony, and Yves Lavoisey, Asnieres, both of France, assignors to Saint-Gobain Industries, Paris, France

Filed Jul. 3, 1979, Ser. No. 54,556
Claims priority, application France, Jul. 5, 1978, 78 19982
Int. Cl.³ B08B *6/00, 1/02, 5/04*
U.S. Cl. 15—1.5 R **18 Claims**



1. Apparatus for removing particles from a sheet, comprising:

a conveyor for transporting the sheet;

means adjacent said conveyor for removing static charge from the sheet as it passes along said conveyor;

means adjacent said conveyor for wiping at least one side of the sheet as it passes along said conveyor;

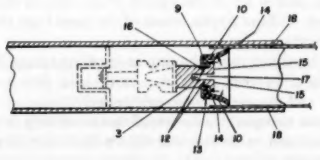
means adjacent said conveyor for scraping at least one side of the sheet as it passes along said conveyor; and

means associated with said wiping and scraping means for removing the wiped and scraped particles from the sheet.

4,281,432
TUBE CLEANER

George E. Saxon, Oakmont, Pa., assignor to Condenser Cleaners Mfg. Co., Inc., Verona, Pa.

Filed Aug. 2, 1979, Ser. No. 63,149
Int. Cl.³ B08B *9/04*
U.S. Cl. 15—104.06 R **1 Claim**



1. A fluid propelled projectile for cleaning the inner wall of a condenser tube which is fitted with an internal sleeve over at least a portion of the tube comprising:

(a) a forward elongated body section, of a diameter which allows it to pass through said internal sleeve, having a depending scraper element extending radially outward to contact and scrape the inner wall of said tube as said projectile is propelled therethrough, said scraper being resilient in the radial direction such that said scraper can pass through said internal sleeve and over dents in said tube;

(b) a terminal section comprising:

(I) a resilient annulus having an integral, rearwardly and outwardly extending skirt; and

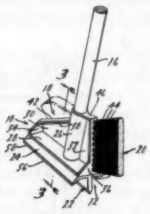
(II) two rigid annular discs, each of said disc abutting opposite sides of said resilient annulus; and

(c) a rearward axial extension from the body section, having a diameter less than the diameter of the body section, and having an axial bore and a terminal crimp, said axial extension passing through the resilient annulus and the annular discs such that the terminal section is returned on said axial extension between the body section and the terminal crimp.

4,281,433
COMPOUND TOOL

Jack J. Sendoykas, 23510 Denton, Apt. 227 T, Mt. Clemens, Mich. 48083

Filed Jan. 25, 1980, Ser. No. 115,423
Int. Cl.³ A47L *1/08, 23/04*
U.S. Cl. 15—105 **13 Claims**



1. A multi-purpose tool for automotive vehicles and the like having a handle and an ice breaker extending longitudinally in opposite directions and having also a brush, a shoe scraper, a snow scraper and a squeegee extending laterally therefrom in different directions behind said ice breaker,

said tool adapted to be held manually by the handle with said ice breaker on the ground and when said tool is so placed said ice breaker supporting said brush, said squeegee and said snow scraper above and clear of the ground and said shoe scraper in position for use.

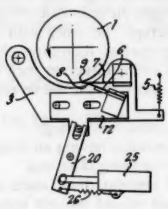
4,281,434
APPARATUS FOR CLEANING THE SURFACE OF A ROTATING ROLLER

Lawrence G. Sullivan, Halifax, England, assignor to Crosrol Limited, Halifax, England

Filed Feb. 20, 1980, Ser. No. 123,419
Claims priority, application United Kingdom, Feb. 23, 1979, 06454/79
Int. Cl.³ D01H *11/00*
U.S. Cl. 15—256.51 **7 Claims**

1. Apparatus for cleaning the surface of a rotating roller comprising first and second cleaning blades each having an edge extending axially across the surface of said roller and adjacent thereto, said two blades being mounted so that their said edges are substantially parallel and directed against the direction of rotation of said roller with said edge of said second blade disposed behind said edge of said first blade relative to

said direction, and means for causing relative movement of said blades to reverse the disposition of said edges and to cause said



edge of one of said blades to scrape a surface of the other of said blades during such reversal.

4,281,435

SLIDING DOOR CLOSET

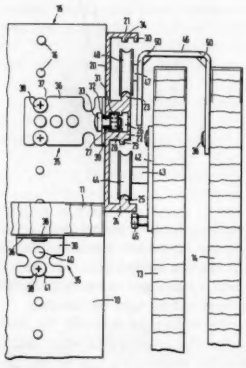
Claus Winter, Hamburg, and Wolfgang Ehrmann, Ruppichteroth, both of Fed. Rep. of Germany, assignors to Inbauproduct Innenausbausysteme GmbH & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,856

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844396

Int. Cl.[3] **A47N** *1/04, 15/00*

U.S. Cl. 16—94 R **9 Claims**



1. Apparatus for hanging the sliding doors of a closet comprising:

upper and lower track members each of which includes a rear wall and guide rail means for guidingly supporting the rollers of at least two sliding doors;

at least one longitudinally extending groove in each of said track members accessible through said rear wall thereof;

a threaded nut positioned non-rotatably but displaceable lengthwise within each said groove;

a bracket comprising a pair of mutually substantially perpendicularly extending legs connected to each of said track members by one of said legs, the other leg of each said bracket having at least one hole formed therein for reception of fastening means to secure said other leg to a selected vertical wall of the closet;

and threaded fastening means insertable through said one leg of each said bracket into said groove and threadedly cooperable with one of said nuts for connecting said one leg of each bracket with one of said track members.

4,281,436

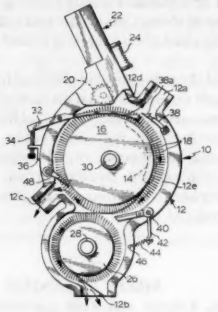
SHRIMP PROCESSING MACHINE

Paul H. Hoffman, 18003 NW. 78th Ave., Hialeah, Fla. 33015, and John A. Lessig, 4140 Hardie Ave., Miami, Fla. 33133

Filed May 8, 1979, Ser. No. 37,396

Int. Cl.[3] **A22C** *29/02*

U.S. Cl. 17—72 **1 Claim**



1. A device for processing shrimp and the like arthropoda comprising:

a housing, a tunnel opening through said housing including a main portion and outwardly opening infeed and discharge end portions interconnected by said main portion;

means to ventrally impale shrimp fed into said infeed portion of said tunnel and to transport them through said main tunnel portion and said discharge end portion;

an operating means positioned relative to the path of advance through said main tunnel portion to longitudinally disrupt and remove the abdominal membrane of each shrimp positioned thereupon to loosen the front shell sections therefrom,

said operating means disposed within said main portion of said tunnel to longitudinally slit the dorsal side of the shrimp meat to expose the mid-gut vein as said ventrally impaled shrimp are advanced by said transport means through said main tunnel portion; and

air flow inducing vacuum means opening into said main tunnel portion to pneumatically advance the shrimp fed into said infeed portion therethrough into ventral engagement with said transport means and to pneumatically displace the swimmerets, front shell section and mid-gut vein from each impaled shrimp meat being transported through said main tunnel portion and to discharge such debris from the device, said air flow induced pneumatic means including an enlarged opening disposed on each side of said housing strategically positioned in fluid communication relative to said transport means and said discharge section for displacement of the shrimp shell from the meat without displacement of the meat from the transport means;

a second transport means having an impaling means disposed thereupon in communication with said first transport means and disposed within said tunnel,

said second transport means impaling said shrimp in a dorsal direction and receiving said shrimp from said first transport means,

said tunnel including a wall portion shaped for removing said shrimp from said second transport means for ejection from said housing.

4,281,437
METHOD AND APPARATUS FOR OPENING TEXTILE FIBER BALES

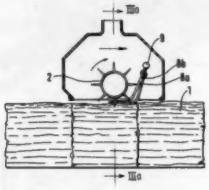
Hans-Jürgen Marx, Mönchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Mönchen-Gladbach, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,476

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847460

Int. Cl.³ D01G *7/06*

U.S. Cl. 19—80 R **4 Claims**



1. In a method of opening fiber bales with an apparatus having a traveling opening member propelled along serially positioned fiber bales to execute opening passes, a grate having parallel-spaced grate bars extending, in their operative position, in the traveling direction and pressing down on an upper surface of the bales; the opening member having opening elements projecting through the clearance defined by adjoining grate bars; the improvement comprising the step of periodically and in opposing phases lifting and lowering several grate bar groups of the grate between operative and inoperative positions for periodically varying the relative position between the upper surface of the bales and the grate to periodically expose ridges of bale material formed underneath the grate bars during the opening operation.

4,281,438
FLAT COMBING MACHINE

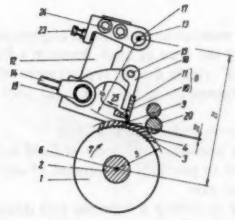
Manfred Welker, Limbach-Oberfrohna, and Hans-Joachim Scholz, Karl Marx Stadt, both of German Democratic Rep., assignors to VEB Kombinat Textima, Karl Marx Stadt, German Democratic Rep.

Filed Oct. 15, 1979, Ser. No. 84,946

Claims priority, application German Democratic Rep., Oct. 24, 1978, 208629

Int. Cl.³ D01G *19/10, 19/16*

U.S. Cl. 19—225 **3 Claims**



1. Flat combing machine whereby the needle rows are rigidly and solidly arranged on the round comber and the tong, driven by a crankdrive mechanism, is fastened to a suspended pendulum, characterized by the fact that the distance (**21**) between the pivot (**6**) of the round comber (**1**) and the pivot (**17**) of the suspended pendulum (**12**) is smaller than the sum of the maximum radius (**5**) of the needle points (**4**) to the pivot (**6**) of the round comber (**1**), plus the minimum distance (**22**) between the jaw (**9**) of the tong (**8**) and the points of the needles (**4**) and plus the radius (**16**) of the jaw (**9**) of the tong (**8**) to the pivot (**17**) of the suspended pendulum (**12**), wherein the radius (**5**) of the needle points (**4**) to the pivot (**6**) of the round comber (**1**) of the needle rows (**3**), lying side by side to each other, decreases at first and subsequently increases, counter to the direction of rotation (**7**) of the round comber (**1**).

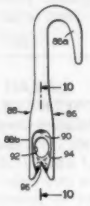
4,281,439
SELF-CLEATING ROPE HOLDER

Keith W. Klein, 18 Walker Dr., Simsbury, Conn. 06070

Division of Ser. No. 911,374, Jun. 1, 1978, Pat. No. 4,178,661. This application Aug. 16, 1979, Ser. No. 67,098

Int. Cl.³ F16G *11/00*

U.S. Cl. 24—130 **1 Claim**



1. A holder for adjustably belaying the free end of a rope or the like, said holder comprising, in combination:

A. an elongated body;

B. a laterally extending hook integrally formed with said body adjacent one end thereof for anchoring the holder to a desired object;

C. means defining a first aperture in said body through which the free end of the rope is drawn;

D. means defining a second aperture in said body through which the rope free end extending from said first aperture is drawn, said first and second aperture defining means provided by a conical passageway formed in said body adjacent its other end and extending perpendicular to the longitudinal axis of said body, the opposite ends of said passageway constituting said first and second apertures, and

E. means forming a V-shaped slot in the sidewall of said conical passageway, said slot having its wide end in open communication with said second aperture and extending generally toward said first aperture,

(1) whereby, the free end of the rope is pulled in a given direction to draw the rope through said first and second apertures and said passageway to a desired tension, and then deflected laterally from said given direction to move the rope out of said second aperture into said slot,

(2) thereby wedging the rope in said slot to maintain the desired rope tension, which inherently pulls the rope deeper into said slot.

4,281,440
BELT BUCKLE CONSTRUCTION

Jeffrey E. Britz, 295 Fifth Ave., New York, N.Y. 10016

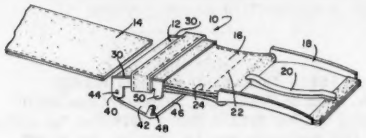
Filed Feb. 22, 1980, Ser. No. 123,533

Int. Cl.³ A44B *11/00, 11/12*

U.S. Cl. 24—191 **7 Claims**

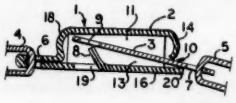
1. Improved belt buckle construction for receiving a removable flexible belt loop and material covering on a buckle frame comprising a generally flat frame having raised sides on two opposite edges for forming a recessed flat section intermediate the raised sides, said raised sides having extensions in an opposite direction forming mating hinge elements at an end thereof, a flanged locking member pivotally mounted onto said mating hinge elements adjacent a flange-formed portion thereof, a claw grabbing surface disposed between said mating hinge elements on said flanged locking member for engaging a belt

strap end, snap formed tabs at the other end of said flanged locking member, said raised sides further having mating snap elements extending from the other end thereof and for lock-



ingly engaging with said snap formed tabs, and clamp elements extending from intermediate portions of the raised sides adapted to be folded over and retain a leather member in fixed relation.

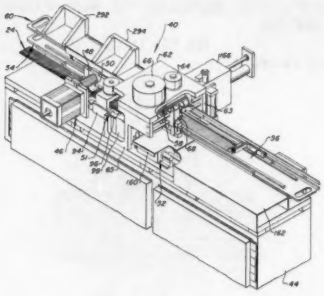
4,281,441
JEWELRY CLASP
James W. Rasner, 8545 Mission Gorge Rd., Santee, Calif. 92071
Filed Sep. 10, 1979, Ser. No. 73,959
Int. Cl.[3] A44B *11/00, 19/00*
U.S. Cl. 24—230 R **6 Claims**



1. A clasp for joining together first and second parts of a piece of jewelry or the like which comprises:
- a first embodiment attached to said first part having a slot-like aperture and an anchoring means behind said aperture;
- a second flat element attached to said second part, said second element insertable into said slot and having means for engaging said anchoring means;
- said first element further comprises an oblong enclosure having:
- a generally flat floor;
- sidewalls extending upward from said floor;
- a generally horizontal roof;
- front and back walls extending downward from the roof;
- the back wall being secured at its base to the floor;
- the front wall being dimensioned to leave a slot-like aperture between its bottom edge and the floor;
- said roof and front wall are free to resiliently move up and down, thereby enlarging or narrowing the aperture;
- said anchoring means comprises:
  - a stub extending from the floor within the enclosure; and
  - said second flat element having a hole engageable around the stub.

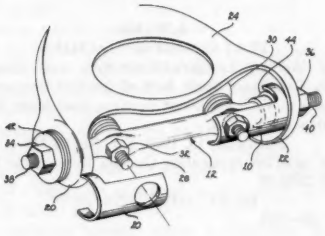
4,281,442
APPARATUS FOR APPLYING CONNECTORS TO MULTICONDUCTOR FLAT CABLE
Robert B. Senior, Grand Haven, and Frederick Karasinski, Grand Rapids, both of Mich., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Jun. 18, 1979, Ser. No. 49,842
Int. Cl.[3] H01R *43/00*
U.S. Cl. 29—33 M **28 Claims**

1. Apparatus for applying a two-part electrical connector to flat multiconductor cable comprising;
- a frame;
- a cable feed mechanism disposed on said frame and operable to feed a predetermined length of cable along a predetermined path on said frame;
- connector holding means disposed on said frame for holding said connector parts spaced apart one part from the other, said connector holding means being operable to be moved between a first position for receiving said connector parts and a second position adjacent to said path so that said connector parts are disposed on opposite sides of said cable; and



- means on said frame for engaging said connector parts in said second position of said connector holding means and moving said connector parts to apply said connector to said cable.

4,281,443
POSITION MAINTAINING TOOL
James Threlfall, 4817 W. Pinchot, Phoenix, Ariz. 85031
Filed Jul. 27, 1979, Ser. No. 61,377
Int. Cl.[3] B25B *27/14*
U.S. Cl. 29—271 **3 Claims**



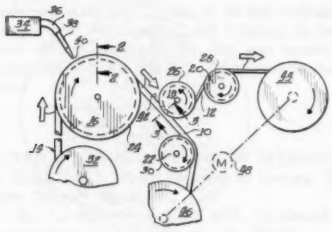
1. A tool for maintaining positional alignment intermediate a control arm and the arms of an A-frame in a front end suspension system of a vehicle during replacement of a control arm-/A-frame interconnecting bushing, said tool comprising in combination:
- (a) a body having a longitudinal axis:
- (b) means for securing said body in fixed location upon the control arm to preclude movement of said body along its longitudinal axis:
- (c) said body including a terminal end displaced from said securing means for bearing against and blocking movement of an arm of the A-frame toward the fixed location on the control arm along the longitudinal axis of said body, said terminal end being configured to contactingly mate with the corresponding surface of the arm of the A-frame; and
- (d) said terminal end including first and second means extending in opposed directions in orthogonal axes within a plane lateral of the longitudinal axis to a point rotated 90° from said securing means for suspending said terminal end from the control arm and for inhibiting tilting movement of said body about said securing means; whereby, said tool

is supported upon the control arm and maintains the positional relationship of the control arm and arm of the A-frame during replacement of the bushing therebetween.

4,281,444
WIRE STRIPPER

William G. Smith, St. Charles, Ill., assignor to Belden Corporation, Geneva, Ill.

Filed Aug. 6, 1979, Ser. No. 63,846
Int. Cl.[3] H02G 1/12
U.S. Cl. 29—426.5 21 Claims



1. A method for stripping the outer jacket from the inner core of a flexible cable comprising:

generating a jet of fluid of diameter narrow relative to the cable being stripped and under pressure great enough to cut the outer jacket of the cable without damage to the inner core;

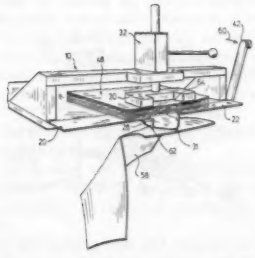
directing the jet of fluid along a portion of the cable so as to cut at least part way through the outer jacket; and

separating the inner core and the outer jacket along the cut.

4,281,445
APPARATUS AND METHOD FOR REPLACEMENT OF FILE FOLDERS HAVING FASTENERS

Donald T. Barber, Toronto, Canada; George B. Pfeffer, Minnetonka, and Esther E. Olson, Cottage Grove, both of Minn., assignors to Datafile Limited, Willowdale, Canada

Filed Jul. 5, 1979, Ser. No. 53,561
Int. Cl.[3] B42F 3/02; B25C 11/00
U.S. Cl. 29—426.5 33 Claims

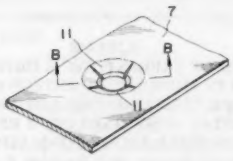


1. Apparatus for withdrawing a releasable fastener from and out of fastened bulk paper sheet comprising means for supporting fastened bulk paper sheet next its fastener during and after fastener withdrawal and means for withdrawing a releasable fastener away from and out of such supported side of bulk paper sheet.

4,281,446
WAY OF JOINING A HARD AND A SOFT SHEET

Yoshihumi Umeno, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Japan

Filed Aug. 16, 1979, Ser. No. 67,168
Claims priority, application Japan, Aug. 23, 1978, 53-103198
Int. Cl.[3] B23P 11/00
U.S. Cl. 29—432.1 7 Claims



1. A method of joining together a harder plate and a softer plate, comprising the steps, in order, of:

forming a conical bore having tapered walls in the harder plate;

making a plurality of radial cuts along said tapered walls, each of said cuts extending to the periphery of an imaginary ring lying in the plane of the harder plate, said imaginary ring surrounding said bore thereby defining a plurality of portions formed from the harder plate;

pressing out said plurality of portions of the harder plate by punch and die means, each of said portions projecting from the harder plate and having a sharp end;

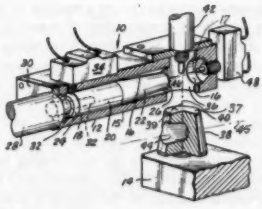
penetrating the projecting portions through the softer plate until the harder plate tightly contacts the softer plate; and

bending the sharp end of the projecting portions outwardly so that they engage with the softer plate.

4,281,447
DETACHABLE TOOL INTERFACE SYSTEM FOR A ROBOT

George J. Miller, and George W. Sutter, both of Florissant, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 1, 1979, Ser. No. 16,353
Int. Cl.[3] B23Q 3/155
U.S. Cl. 29—568 20 Claims



1. An interface to enable the removable attachment of at least one operator device to a machine, said interface including:

a body defining a frustro-conical surface therein having an axis and a cylindrical surface therein having an axis perpendicular to said frustro-conical surface axis;

an attachment member having an outer frustro-conical surface with an axis, said outer frustro-conical surface being shaped and sized to mate with said frustro-conical surface of said body, said attachment member also defining a second frustro-conical surface therein having an axis perpendicular to said outer frustro-conical surface axis;

a pin having a cylindrical portion and a frustro-conical portion, said cylindrical portion being positioned and

sized to slide along said cylindrical surface to said body and said frustro-conical portion being shaped and sized to mate with said second frustro-conical surface of said attachment member;

means to move said pin frustro-conical portion into and out of engagement with said second frustro-conical surface of said attachment member;

means to attach said body to the machine; and

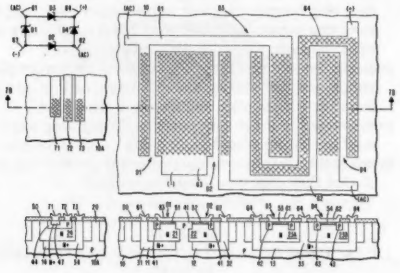
means to attach said attachment member to the operator device.

4,281,448

METHOD OF FABRICATING A DIODE BRIDGE RECTIFIER IN MONOLITHIC INTEGRATED CIRCUIT STRUCTURE UTILIZING ISOLATION DIFFUSIONS AND METAL SEMICONDUCTOR RECTIFYING BARRIER DIODE FORMATION

Vincent J. Barry, Hudson, and Jeremiah P. McCarthy, Framingham, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 14, 1980, Ser. No. 140,036
Int. Cl.³ H01L *21/76, 27/10, 29/56*
U.S. Cl. 29—577 C **18 Claims**



1. The method of fabricating monolithic integrated circuit structure incorporating a metal-semiconductor rectifying barrier diode bridge comprising:

providing a substrate of semiconductor material of one conductivity type;

growing an epitaxial layer of semiconductor material of the opposite conductivity type on a surface of the substrate to produce a body of semiconductor material;

diffusing conductivity type imparting material of the one conductivity type into portions of said layer extending to said substrate to form isolating barriers delineating a first sector of the opposite conductivity type electrically isolated from the remainder of the body and having a first and a second zone of the opposite conductivity type separated from each other by an intervening barrier of semiconductor material of the one conductivity type and delineating a second sector of the opposite conductivity type electrically isolated from the remainder of the body and having a third and a fourth zone of the opposite conductivity type;

placing metal-semiconductor rectifying barrier forming metal on portions of said first zone and said second zone of said one sector, on a portion of said third zone, and on a portion of said fourth zone of said second sector and forming metal-semiconductor rectifying barriers between the metal and the semiconductor material; and

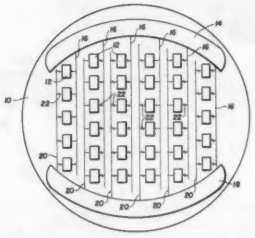
forming a first electrical connection in ohmic contact with the first zone of semiconductor material and connected to the metal on the third zone, a second electrical connection in ohmic contact with the second zone of semiconductor material and connected to the metal on the fourth zone, a third electrical connection connected to the metal on the first and second zones, and a fourth electrical connection in ohmic contact with the third and fourth zones of semiconductor material.

4,281,449

METHOD FOR QUALIFYING BIASED BURN-IN INTEGRATED CIRCUITS ON A WAFER LEVEL

Kenneth A. Ports, Indialantic, and Thomas R. St. Clair, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 21, 1979, Ser. No. 106,339
Int. Cl.³ G01R *31/02*
U.S. Cl. 29—593 **10 Claims**



1. A method for qualifying biased burn-in integrated circuits at a wafer level comprising:

forming a first and a second discrete conductor on said wafer, each connected to each die on said wafer and at least one of said conductors being connected to each die by a fusible element;

electrically biasing said conductors;

heating said wafer at a high, burn-in temperature while electrically biased;

testing the condition of the fusible elements and marking defectively connected dice;

removing said conductors; and

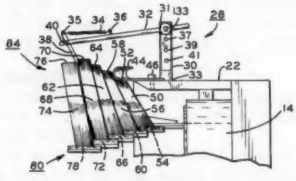
testing the circuitry on said dice and marking defective dice.

4,281,450

METHODS AND APPARATUS FOR INSERTING COILS INTO DYNAMOELECTRIC MACHINE STATOR ASSEMBLIES

Richard W. Bale, Fennville, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 22, 1979, Ser. No. 86,794
Int. Cl.³ H02K *15/06*
U.S. Cl. 29—596 **7 Claims**



1. A method of transferring at least one winding, comprising a plurality of coils formed of a plurality of conductor turns, into axially extending slots of a stator assembly including a magnetic core having an axially extending bore and a pair of spaced apart end faces communicating with the axially extending slots and the bore, the method comprising:

a. winding the plurality of conductor turns about a coil form to provide wound turns for a plurality of coils for subse-

quent insertion in respective axially extending slots of a magnetic core;

b. releasing first portions of the plurality of wound turns while second portions of the plurality of wound turns remained engaged with the coil form and moving the wound turns toward the core for placement therein; and

c. intercepting with a yieldable means the released first portion of the wound turns of a first coil having a position laterally outside of the wound turns of a released first portion of a second coil as the first and second coils are moved toward the core, and laterally displacing the released first portion of the first coil so that the intercepted released first portion of the first coil is displaced to a position laterally inside of the released first portion of the second coil;

d. the displacing of the first portion of the first coil inside of the first portion of the second coil reducing an interengagement pressure between the first and second coils during placement of the first and second coils in the magnetic core.

4,281,451

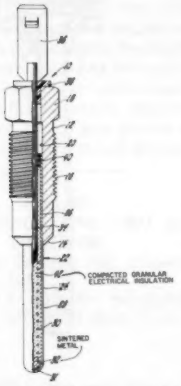
ELECTRIC HEATER -METHOD OF MAKING

Gamdur S. Mann, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 876,693, Feb. 10, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,999

Int. Cl.³ H05B *3/00*

U.S. Cl. 29—611 **2 Claims**



1. The method of making an electric heater of the type having an elongated electrically conductive tubular metal sheath closed at one end and containing an axially extending heating coil electrically grounded at one end to the sheath adjacent its closed end and insulated therefrom elsewhere by heat conductive insulation, said method comprising the steps of:

(a) forming the sheath with a width substantially larger than the desired finished size thereof,

(b) forming the heating coil with a width dimension smaller than the interior width of the sheath, the coil being attached at one end to an electrical conductor, the other end being free,

(c) centering the heating coil and conductor in the sheath with the free end adjacent to the sheath closed end, the adjacent surfaces of the sheath interior and the coil free end being free from foreign substances,

(d) filling the tip portion of the sheath interior with an amount of sinterable metal powder sufficient to cover the free end of the heating coil,

(e) filling the remaining open interior of the sheath with granular high temperature electrical insulating material tightly packed around and within the heating coil and sealing the open end of the sheath to retain the insulating material in place,

(f) swaging the heater assembly to reduce the width and extend the length of the sheath and interior heating coil to finished dimensions, and

(g) passing an electric current between the heating element and sheath through the metal powder to heat and sinter the metal powder in the sheath tip, surrounding the coil free end, whereby a low resistance electrical connection is formed between the sheath and the heating coil through the sintered metal.

4,281,452

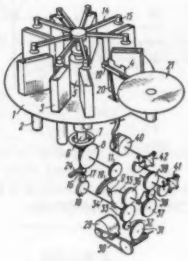
METHOD OF ASSEMBLING BANKS OF BATTERY ELECTRODES

Ivan A. Kolosov, ulitsa Astrakhanskaya, 118, kv. 54; Jury E. Ivanyatov, ulitsa M. Zatonskaya, 21, and Valery N. Koshol-kin, Novo-Astrakhanskoe shosse, 43, kv. 47, all of Saratov, U.S.S.R.

Division of Ser. No. 847,563, Nov. 1, 1977, Pat. No. 4,196,511. This application Jul. 6, 1979, Ser. No. 55,318

Int. Cl.³ H01M *10/04*

U.S. Cl. 29—623.1 **3 Claims**



1. A method of selectively assembling a bank of battery electrodes of predetermined thickness for an electrical storage battery, comprising; sorting said electrodes according to thin, medium and thick thickness and by polarity into a plurality of stacks so that each of said stacks having electrodes of identical thickness and polarity; the thickness of any two electrodes of medium thickness being equal to the sum of thicknesses of a thin electrode and a thick electrode; providing separator means about each of the electrodes; arranging said stacks in a line and in an alternating sequence of polarity, the stacks of electrodes of medium thickness being of any desired number and the number of stacks of thin electrodes being equal to that of the stacks of thick electrodes; and simultaneously picking up one electrode from each stack; and subsequently successively delivering and positioning the electrodes one on top of the other to form a bank of battery electrodes of a desired mean arithmetic finished bank thickness.

4,281,453

SHAVING APPARATUS

Eppe Bakker; Ebbe Boiten; Eildert Kingma; Gerard J. Lenting, and Willem S. Wijma, all of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,471

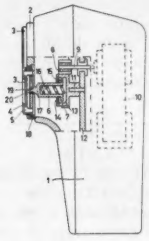
Claims priority, application Netherlands, Sep. 18, 1978, 7809461

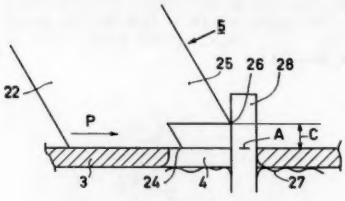
Int. Cl.³ B26B *19/14*

U.S. Cl. 30—43.6 **9 Claims**

1. A shaving apparatus having a shear plate provided with hair entry apertures and a cutting unit associated with and drivable relative to the shear plate; said cutting unit comprising a cutting member, cutting elements extending from said cutting

member toward the shear plate, each cutting element being formed with a cutting edge, and hair-pulling elements respectively associated with the cutting elements and positioned in front of said cutting elements in the direction of driving, each





hair-pulling element being immobile relative to the associated cutting element and being formed with a hair-contact edge, said hair-contact edge being located at a greater distance from the shear plate than said cutting edge.

4,281,454

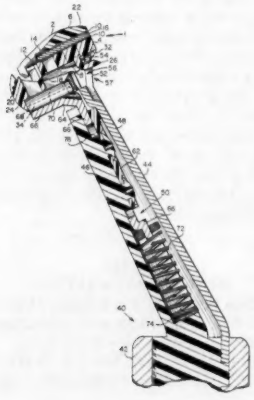
SHAVING SYSTEM

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 31, 1979, Ser. No. 71,471

Int. Cl.³ B26B *21/06*

U.S. Cl. 30—47 **7 Claims**



1. A shaving system comprising a handle and a blade assembly, the handle comprising a grip portion, a neck portion extending from said grip portion, a first handle connecting means extending from a free end of said neck portion, and a second handle connecting means extending from said free end of said neck portion, the blade assembly comprising a body portion having blade means permanently fixed therein, a first blade assembly connecting means disposed on said body portion and engaged with said first handle connecting means to form a pivotal connection therebetween, and a second blade assembly connecting means disposed on said body portion and fixedly interconnected with said second handle connecting means, said second handle connecting means being reciprocally moveable in said handle.

4,281,455

RAZOR WITH REMOVABLY MOUNTED PIVOTAL CARTRIDGE

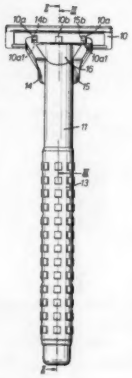
Richard B. Dixon, Woodley, and Peter Carr, Morpeth, both of England, assignors to Wilkinson Sword Limited, Buckinghamshire, Englar.d

Filed Oct. 1, 1979, Ser. No. 80,280

Claims priority, application United Kingdom, Oct. 20, 1978, 41334/78

Int. Cl.³ B26B *21/06, 21/22*

U.S. Cl. 30—47 **3 Claims**

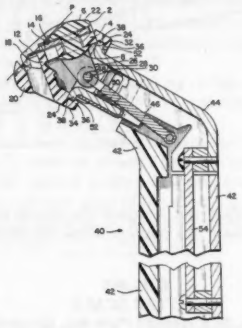


1. A razor assembly comprising a shaving unit and a handle, said shaving unit having platform means, blade means, first pivotal mounting means for pivotally connecting said shaving unit to said handle, and means for receiving a biasing force from said handle, said handle including two flexible arms which at one end have second pivotal mounting means complementary to said first pivotal mounting means, said flexible arms being secured to said handle in a region spaced from said second pivotal mounting means, a movable button engaging said flexible arms and movable for flexing said arms to disengage said second pivotal mounting means from said first pivotal means and for reverse movement which free said flexible arms for engagement of said second pivotal mounting means with said first pivotal mounting means, means for exerting a biasing force on said means for receiving a biasing force, said button having ramp means which are movable relative to the surface of each flexible arm which engages said button, such relative movements of said ramp means flexing said arms, said ramp means joining a first uninclined portion to a second uninclined portion, both the first and second uninclined portions being parallel to one another and the spacing between the second uninclined portion being greater than the spacing between the first uninclined portion.

4,281,456
RAZOR HANDLE WITH A PIVOTAL CONNECTION MEANS FOR AN ELEMENT OF A BLADE CARTRIDGE MOUNTED THEREON

Paul W. Douglass, Winchester, and Robert A. Trotta, Winthrop, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 13, 1979, Ser. No. 93,847
Int. Cl.[3] B26B *21/06, 21/22*
U.S. Cl. 30—89 **7 Claims**

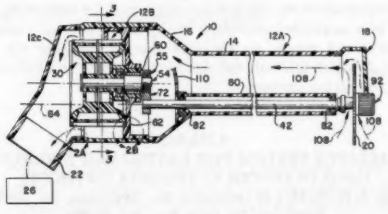


1. A razor handle for use in conjunction with a replaceable blade assembly, the handle comprising a grip portion, a neck portion attached to said grip portion, a first connecting means extending from said grip portion and adapted to engage said blade assembly to form a pivotal connection therebetween, and a second connecting means extending from said neck portion and adapted to fixedly interconnect with mounting means on said blade assembly, said first connecting means being rigid and being pivotally anchored in said grip portion and said neck portion being moveably attached to said grip portion.

4,281,457
VACUUM-OPERATED CUTTING TOOL AND SYSTEM THEREFOR

Richard E. Walton, II, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 17, 1979, Ser. No. 86,025
Int. Cl.[3] B27B *9/00;* **B26B** *25/00*
U.S. Cl. 30—124 **8 Claims**



1. A cast cutting tool for cutting casts and the like using an oscillating saw blade, said tool comprising:

(a) a housing for supporting a flow of air therethrough from an inlet opening on an inlet side of said housing to an outlet side thereof,

(b) a turbine means rotatably mounted within said housing for rotation in response to a vacuum-induced air flow therethrough,

(c) a motion converting means connected to said turbine means for converting the rotary motion of said turbine means to a rotary oscillating motion about an axis of rotation,

(d) a chuck means connected to said motion converting means through a drive shaft, said chuck means adapted to receive a saw blade thereon, the saw blade caused to oscillate about said axis of rotation in response to rotation of said turbine means,

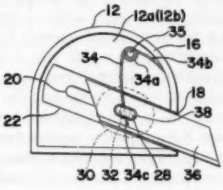
(e) said housing having an elongated inlet portion having an external surface thereon for manual gripping, said drive shaft extending through said elongated inlet portion from said motion converting means to said chuck means, the inlet opening located proximate said chuck means, and

(f) said elongated inlet portion is divided into a drive shaft tunnel through which said drive shaft extends from said motion converting means to said chuck means and an air flow channel.

4,281,458
COMPACT SAFETY KNIFE

Yoshio Okada, Osaka, Japan, assignor to Okada Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 17, 1979, Ser. No. 67,762
Claims priority, application Japan, Dec. 27, 1978, 53-179111[U]; Feb. 22, 1979, 54-22721[U]
Int. Cl.[3] B26B *1/00*
U.S. Cl. 30—162 **6 Claims**



1. A compact safety knife which comprises:

a generally flat holder having a chamber therein and an opening therein opening out of said chamber;

an elongated blade member in said chamber;

said holder having a guide slot defined therein;

a manipulatable member mounted on said holder and having a slider positioned externally of the holder and a stem having one end integrally formed with said slider and extending through said guide slot, and said stem having a slot therein, said manipulatable member being movable between projected and retracted positions for, when said manipulatable member is moved to the projected position, moving said blade member through said opening a distance such that only one end portion of the blade member projects out of the chamber through the opening, and when said manipulatable member is moved to the retracted position, said blade member is moved so that it is completely within said chamber; said guide slot extending in a direction parallel to the direction of movement of the blade member;

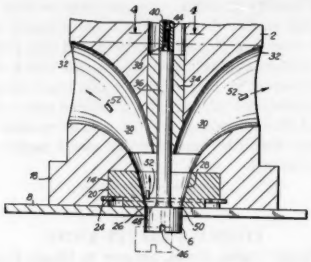
means in said holder for guiding the blade member for straight movement in the longitudinal direction thereof during the movement of the manipulatable member between the projected and retracted positions; and

a wire spring in said chamber having one end engaged with said holder, the other end of said wire spring loosely extending through said slot in said stem and biasing said manipulatable member to the retracted position and when the manipulatable member is in the projected position tending to move the blade member in a direction so that the cutting edge thereof is spaced from the edge of said opening in said holder.

4,281,459
NIBBLING TOOL

Adrian H. Krieg, Woodbridge, Conn., assignor to Widder Corporation, Naugatuck, Conn.

Filed May 24, 1979, Ser. No. 42,080
Int. Cl.[3] B26B *15/00*
U.S. Cl. 30—228 12 Claims



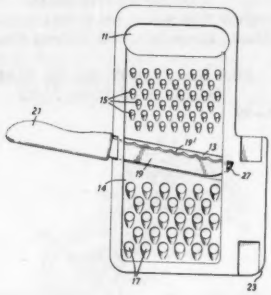
1. In a nibbling tool of the type in which a reciprocating mechanism operates a reciprocating punch to force sheet material to be cut against a die, the improvement comprising a die holder attached at one end to the tool and its other end having a plane surface adapted to contact the surface of said material, said die holder having one or more external openings intermediate its ends, a die having a central opening forming a cutting edge, means mounting said die within said die holder with its cutting edge flush with the material-contacting surface of said die holder, a punch, and means within said die holder slidably supporting said punch in operable relationship with said reciprocating mechanism for reciprocal motion toward and away from said die and centrally of said die, so that the upper edge of said punch in its uppermost position is coincident with the cutting edge of said die and in its lowermost position is adapted to protrude beyond the thickness of the material to be nibbled, the means for slidably supporting said punch comprising a rod attached at one end to said punch and at the other to the reciprocating mechanism, the cutting surface of said punch extending laterally from said rod and completely surrounding the circumference of said rod to allow nibbling to occur regardless of the direction in which the tool is moved, said die holder being provided with one or more internal passageways communicating at their lower end with the central opening of said die and at their upper end communicating with the openings in the surface of said die holder.

4,281,460
KITCHEN UTENSIL

David P. Harris, 16 Warrington Crescent, London W9, England

Filed Nov. 5, 1979, Ser. No. 91,333
Claims priority, application United Kingdom, Nov. 7, 1978, 43569/78; Jun. 4, 1979, 193229/79
Int. Cl.[3] B26B *3/00*
U.S. Cl. 30—278 1 Claim

1. A food slicer and grater comprising a generally rectangular plate having an integrally formed sheath along one edge thereof, said sheath adapted to receive and store a knife having a blade and a handle, said sheath covering both ends of said knife blade, intermediate the ends the knife blade being covered on one side, said plate further having along one edge perpendicular to said knife receiving edge a handle, said plate further being generally bisected into a top half and a bottom half by a slicer slot adapted to receive the knife from the storage position and expose a cutting edge on the knife at a preselected distance away from a flat side of the plate, said slot having a pair of integral superimposed ribs, transverse to the knife blade to support the knife blade at each end, said plate having on the other side a plurality of holes having protruding portions to form a cutting edge to grate food, one plurality of

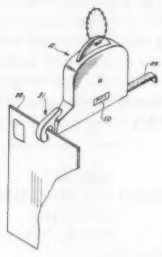


holes above the slicer slot, a second plurality of holes being of a different dimension at a position below the slicer opening.

4,281,461
LETTER SCALE

Nathaniel R. Roe, 20 S. Howells Point Rd., Bellport, N.Y. 11713

Filed May 29, 1980, Ser. No. 154,228
Int. Cl.[3] G01G *1/18;* G01B *3/08*
U.S. Cl. 33—138 8 Claims

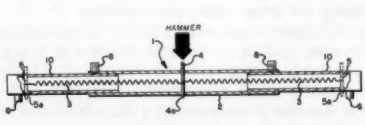


1. A combination tape measure and letter scale comprising a case, a coilable tape rule wound in said case and extending from one side thereof, said rule having both linear and weight gradations thereon, said case having means for supporting said case in a suspended condition in alignment with its center of gravity, and means on the side thereof opposite the side through which said rule extends for supporting an object to be weighed on the casing.

4,281,462
CALLIPER SYSTEM FOR LAYING OUT STIRRUPS USED IN LOWER EXTREMITY ORTHOSIS

Daniel J. Herbold, 120 Destrehan St., Destrehan, La. 70047

Filed Sep. 28, 1979, Ser. No. 80,046
Int. Cl.[3] G01B *3/00;* B25H *7/04*
U.S. Cl. 33—191 14 Claims



1. A method of making an orthosis stirrup from a flat, piece

of bendable stirrup material having joint holes at either end for use in a lower extremity orthosis, comprising the following steps:

(a) providing a stirrup calliper having two end sections and a moveable central section carrying a marking device and being laterally moveably connected between said two end sections, said two end sections having protruding anchoring means protruding down from said end sections for anchroing said end sections to the stirrup joint holes;

(b) placing said calliper on the flat stirrup material and inserting said protruding anchoring means into the joint holes and thereby anchoring said anchoring means to the stirrup joint holes;

(c) centrally locating said marking device over the desired center position of the flat stirrup material off-set, if any, as desired;

(d) using said marking means to mark the center position of the stirrup material off-set, if any, as desired;

(e) using the marked position as a base for determining the bend lines for the arms of the stirrup; and

(f) bending up the arms of the stirrup at the bend lines determined in step "e" to form the stirrup.

4,281,463

ROTATABLE DISC SUPPORT ARRANGEMENT FOR ANGLE MEASURING APPARATUS

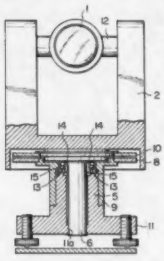
Yuzi Kobayashi, and Hiroshi Nishikatsu, both of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,321

Claims priority, application Japan, Mar. 16, 1978, 53-30334; Mar. 16, 1978, 53-33871[U]

Int. Cl.³ G01C *1/00*

U.S. Cl. 33—299 **6 Claims**



1. An angle measuring apparatus comprising a telescope support section adapted to carry a viewing telescope means and rotatable about a vertical axis, a first disc coaxial with the said vertical axis and rotatable together with the support section, a second disc opposed to said first disc and rotatable about said vertical axis, said first and second discs having cooperating angular scale means, said support section having a rotatable shaft which is coaxial with said vertical axis and rotatable with the support section, a stationary member, bearing means having an inner race means engaged with the rotatable shaft and an outer race means which is received in a recess formed in said stationary member and coaxial with the vertical axis, and disc support means supporting said second disc and being rotatable about said vertical axis relative to said stationary member and fitted to the outer race means.

4,281,464

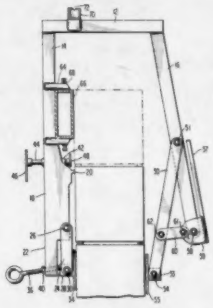
DEVICE TO FACILITATE THE LAYING OF MASONRY UNITS

Rodney J. Hession, and Brent M. Hession, both of New Orleans, La., assignors to Hession Industries, Inc., New Orleans, La.

Filed Jan. 18, 1980, Ser. No. 113,324

Int. Cl.³ G01C *15/10*

U.S. Cl. 33—408 **9 Claims**



1. A device for facilitating the laying of courses of masonry units to form a wall or the like having inner and outer faces comprising at least a pair of spaced supporting units arranged to straddle a previously laid course of masonry units, said supporting units each constituting a rigid unitary structure including a top section having secured to one end thereof a first depending leg in a plane normal to the plane of the top section and a second depending leg secured to the other end of the top section at an obtuse angle with respect to the top section, each of said legs having pivotally connected thereto adjacent its lower end a shoe element, actuating means carried by the ends of said legs for moving said shoe elements into engagement with inner and outer faces of the wall for positioning said supporting units on the wall, said first leg having a pair of support members secured thereto in spaced relation to one another, an elongated rigid guide member interposed between and secured to said support members, said guide member locating the course for masonry units to be laid against it and upon previously laid course of masonry units.

4,281,465

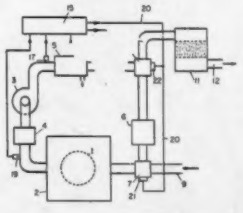
METHOD AND APPARATUS FOR THE RECOVERING OF SOLVENTS IN DRY CLEANING UNITS

Martin R. Zimmermann, Bremen, Fed. Rep. of Germany, and Walter Oettli, Walchwil, Switzerland, assignors to AMEG Verfahrens-und Umweltschutz-Technik AG, Cham, Switzerland

Filed Jul. 17, 1978, Ser. No. 842,298

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—26 **17 Claims**



1. In a . ethod for recovery of solvents from the circulating air and exhaust air of a dry cleaning machine (CRM) by drying

of circulating air and by fresh air drying by help of condensation and adsorption, the improvement of changing the air volume dependent on the condition values for condensation and adsorption of the solvents including establishing an initial air volume at the beginning of a circulating dry interval and diminishing the air volume during said circulating dry interval to about 1/10 of the initial volume and thereafter establishing a fresh air drying interval in which the air volume is established at substantially said initial volume.

4,281,466

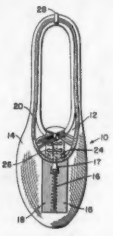
BOWLING SHOE PROTECTOR

Blanche M. Malone, 2822 Dogwood Pl., Nashville, Tenn. 37204

Filed Dec. 17, 1979, Ser. No. 104,078

Int. Cl.[3] **A43B** *3/16, 1/02, 11/00, 5/00*

U.S. Cl. 36—7.1 R **6 Claims**



1. A bowling shoe protector comprising a stretchable fabric body adapted to fit snugly around a bowling shoe, an elastic strip around the top of said fabric body, a zipper at one end of said fabric body adapted to be zipped into an open position for ease in fitting said protector over said shoe and flexible substantially non-absorbent sole joined to said fabric body.

4,281,467

SPORTS SHOES

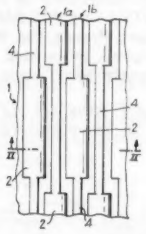
Wolf Anderie, Strasbourg, France, assignor to Adidas Fabrique de Chaussures de Sport, Landersheim, France

Filed Aug. 30, 1979, Ser. No. 71,383

Claims priority, application France, Sep. 4, 1978, 78 25409

Int. Cl.[3] **A43B** *13/04, 13/26;* **A43C** *15/00*

U.S. Cl. 36—32 R **4 Claims**



1. A sole for shoes intended for indoor sports comprising on at least a major part of its floor engageable surface, ribs which are parallel to each other and extend generally transversely with respect to the length of the sole, each rib having in the direction of its length alternate zones of different types, one type having a downwardly rounded section and of which the width is substantially equal to the height and the other type having a narrow section in the form of lamellar of which the width is small with respect to the height, the heights of the ribs in the different zones being the same, each zone of each rib of each type being bounded laterally respectively, by two zones of adjacent ribs of the other type.

4,281,468

SKI BOOT HAVING A CORRUGATED FRONT PORTION

Erik O. Giese, Key Biscayne, Fla.; Dixie L. Rinehart, and Alexander L. Gross, both of Aspen, Colo., assignors to Comfort Products, Inc., Aspen, Colo.

Filed Aug. 16, 1979, Ser. No. 67,178

Int. Cl.[3] **A43B** *5/04, 11/00*

U.S. Cl. 36—121 **9 Claims**

1. A ski boot comprising a stiff outer shell having sides adapted to extend above the ankle of the wearer and having a heel portion adapted to overlap the heel of the wearer, a stiff corrugated front portion adapted to overlap the top of the foot and forward portion of the lower leg of the wearer and adapted to transmit control forces from the leg of the wearer to a ski, and a soft inner boot within said shell adapted to engage the foot and lower leg of the wearer whereby the wearer may bend the lower leg forward to flex said corrugated front portion while maintaining the heel in the heel portion of the shell.

4,281,469

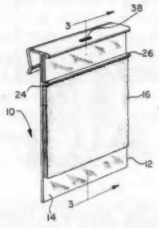
REMOVABLE IDENTIFICATION PANEL FOR EARRING CARDS

Jeffrey A. Feibelman, Cranston, R.I., assignor to A & H Mfg. Co., Johnston, R.I.

Filed Sep. 24, 1979, Ser. No. 78,395

Int. Cl.[3] **G09F** *3/18*

U.S. Cl. 40—16.4 **3 Claims**



1. A device for the display of jewelry articles and the like comprising, a flexible first panel having means for suspending the device in a generally vertical plane, said first panel having a generally planar face including a display area having means adapted to receive at least a portion of a jewelry article displayed thereon, said first panel further including a pair of integral spaced flanges extending forwardly from said panel face, said spaced flanges being configured so as to define an elongated channel therebetween having a reduced entrance portion, said channel being adjacent to but displaced from said display area and having removably mounted therein a generally flat elongated second panel with said second panel dis-

posed in face to face contact with said first panel portion and adapted to receive indicia thereon so as to identify and/or advertise the jewelry displayed from said device, said second panel being dimensioned so as to fit snugly within said channel, the latter dimension of said second panel being greater than said reduced entry portion of said channel, and means resisting longitudinal movement of said second panel relative to said channel.

4,281,470

HOOK HOLDER

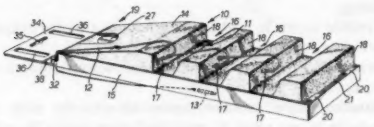
David W. Anderson, 7 Brentwick St., West Chermside, Queensland, 4032, Australia

Filed Oct. 3, 1979, Ser. No. 81,527

Claims priority, application Australia, Oct. 4, 1978, PD6213

Int. Cl.[3] A01K *97/06*

U.S. Cl. 43—57.5 R **8 Claims**



1. A holder for supporting fishing rigs of the type comprising a trace having a hook at one end thereof and a swivel at the other end thereof, said holder including an open top flexible housing and an insert portion adapted to be supported in said housing, the base of said housing being provided with at least one elongated aperture and said insert portion having on its upper side an engagement face formed of penetrable material into which the free end of a said hook may be inserted and a recess on its underside arranged in operative alignment with said aperture or apertures, said recess and each said aperture comprising holding means co-operating to hold a respective said swivel remote from said engagement face, and guide means for locating said trace intermediate said engagement face and said holding means.

4,281,471

RODENT CONTROL DEVICES

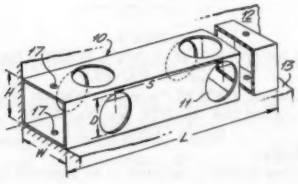
David L. Jenkins, Charlbury, and James A. Gibson, Sanderstead, both of England, assignors to Check Fumigation and Pest Control Limited, Reading, England

Filed Dec. 15, 1978, Ser. No. 971,013

Claims priority, application United Kingdom, Dec. 16, 1977, 52571/77; Jul. 14, 1978, 29959/78

Int. Cl.[3] A01M *25/00*

U.S. Cl. 43—131 **6 Claims**



1. An apparatus for containing at least one quantity of a contact rodenticide, comprising:

(a) an elongate tube having an interior cross-section which allows the tube to be traversed by rodents of a selected target species,

(b) the tube having a uniform interior cross-section which includes at least one planar portion serving as a floor for the tube in use,

(c) the length of the tube being at least 500 mm,

(d) the tube having at least two access holes for target species rodents, said access holes being disposed in the portion of the tube wall which is away from the planar portion serving as the tube floor in use, whereby target species rodents can pass into and out of the tube via any of the access holes when the tube is being supported via its planar portion,

(e) at least one location for receiving and holding a cartridge comprising a quantity of a contact rodenticide each such location being removed from any access hole, and

(f) a cartridge comprising a quantity of a contact rodenticide positioned at each location, such cartridge being of such a size and shape as not substantially to obstruct either the interior of the tube or any access hole and so allowing a target species rodent to reach or pass and thus make contact with the rodenticide, the cartridge comprising an open-ended tubular element having the rodenticide coated upon the interior thereof over an area excluding the end regions of the cartridge.

4,281,472

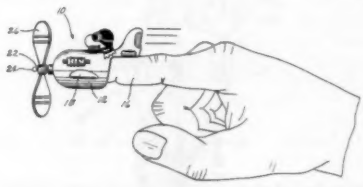
FINGER TOY

Dennis R. Hill, 5620 Washington Ave., Des Moines, Iowa 50310

Filed Aug. 18, 1980, Ser. No. 178,843

Int. Cl.[3] A63H *33/40*

U.S. Cl. 46—53 **4 Claims**



1. A finger toy for mounting on a single digit, comprising:

a body portion in the shape of an airplane having a front nose end and a rear end opening, said rear end opening providing access to an interior body cavity, sized for receiving a digit, and

finger gripping means operatively associated with said interior body cavity for secure but releaseable gripping of a digit when it is thrust into said body cavity,

and a propeller rotatably mounted on said front nose end for responsive rotary motion when air is rushed past the same.

4,281,473

LANDSCAPING BED DIVIDER

Mark A. Emalfarb, 760 Kingsbridge Way, Buffalo Grove, Ill. 60090; Sy Emalfarb, 1621 E. Mission Hills Rd., Apt. 302, Northbrook, Ill. 60062, and Donald J. Reum, 330 Sixth St., P.O. Box B, Albany, Minn. 56307

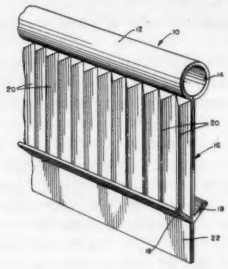
Filed Jan. 4, 1980, Ser. No. 109,541

Int. Cl.[3] A01G *1/08*

U.S. Cl. 47—33 **26 Claims**

1. A landscaping bed divider, or the like, for forming a boundry between adjacent landscaping areas and for preventing plant life such as grass or the like from rooting between adjacent areas, comprising: an elongated divider structure including an enlarged upper section, a flange section extending lengthwise along said upper section and depending downwardly therefrom for insertion in the ground whereby the upper section is located above the top surface of the ground and the flange section forms a barrier between adjacent landscaping areas, means on said flange section to facilitate securing the flange section in the ground and maintaining the same

therein, and means on said flange section distinct from said securing means and between the securing means and said upper



section for reinforcing the flange section in a vertical direction to facilitate inserting the divider structure in the ground.

4,281,474

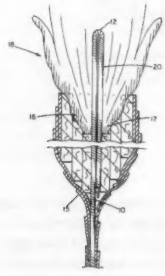
FRESH FLOWER HOLDER

Joseph S. Gallo, 58 Peach St., Walpole, Mass. 02081

Filed Oct. 30, 1980, Ser. No. 202,194

Int. Cl.³ A01G *5/00*

U.S. Cl. 47—58 **10 Claims**



1. In the method of making a holder for a fresh flower or bud from which the stem has been severed, said holder including a covered wire, a portion of absorbent material formed around an intermediate portion of the covered wire to form a moisture reservoir, and a water-repellent covering formed around said absorbent material and extending down the length of said stem, the improvement comprising the steps of

bending double at one end a length of textile-covered wire,

forming a moisture reservoir spaced from the bent double end of said wire by winding around said covered wire a strip of absorbent material while said material is oriented in a nonperpendicular orientation with respect to said wire, so as to thereby form a generally conical well having a stepped interior surface at the flower end of said reservoir and to thereby form a tapered transition having a stepped exterior surface at the other end of said reservoir, and

wrapping an adhesive, water-repellent tape around said absorbent material and wire, so that said tape extends to the edge of or just beyond said absorbent material at the flower end and continues beyond said tapered transition down the length of said wire,

whereby, when said holder is moistened and said flower is impaled on the bent-over end of the wire, the textile-covered wire enters the severed end of said flower without the textile material working off the wire, and the severed end of said flower is securely held within the well formed by the absorbent material.

4,281,475

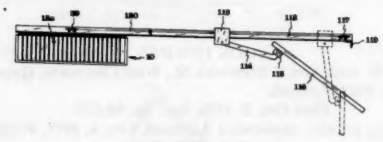
APPARATUS FOR OPENING AND CLOSING A DOOR

Vittorio Spadoni-Censi, Av. Los Mangos, Res. Nina (Sotano) Sector Las Delicias, Sabana Grande, Caracas 105, Venezuela

Filed Jun. 8, 1979, Ser. No. 46,617

Int. Cl.³ E05F *15/10*

U.S. Cl. 49—28 **11 Claims**



1. A door-opening appartus comprising:

a housing;

a reversible motor in said housing having a motor output;

a wormgear journaled in said housing;

first transmission means for linking said motor output to said wormgear for joint rotation;

a rotatable output member connectable to the door and rotatable in one sense to open said door and in the other sense to close said door;

second transmission means for linking said wormgear to said output member for joint rotation;

clutch means in said second transmission means for decoupling said wormgear from said output member when rotation of said output member is resisted with a torque exceeding a given limit torque;

a control disk in said housing;

third transmission means for positively mechanically linking said control disk to said output members for rotating said control disk jointly with but at a much slower angular speed than said output member.

an opening stop and a closing stop mounted at angularly offset locations on said control disk;

respective opening and closing switches engageable with said opening and closing stops in open and closed positions of said door;

electrical control means connected to said switches and to said motor for allowing operation of said motor only in a sense to open said door when said closing stop engages said closing switch and for allowing operation of said motor only in a sense to close said door when said opening stop engages said opening switch; and

safety means for reversing the operation of said motor when said stops are out of engagement with said switches and when displacement of said door is resisted with a force exceeding a given limit force.

4,281,476

WINDOW ASSEMBLY HAVING A SINGLE BENDABLE GLASS PANEL

Eugene B. LeVan, 15858 El Paseo Dr., Whittier, Calif. 90603

Filed Oct. 26, 1979, Ser. No. 88,335

Int. Cl.³ E05F *13/00*

U.S. Cl. 49—34 **12 Claims**

1. A window assembly adapted to be mounted in a vehicle wall, comprising:

an annular frame structure adapted to be fixedly mounted within an opening formed in said wall;

a single glass panel removably supported in said fixed-frame structure and having oppositely disposed free ends, said glass panel being bendable along the longitudinal length thereof, wherein the length thereof is substantially greater than its width;

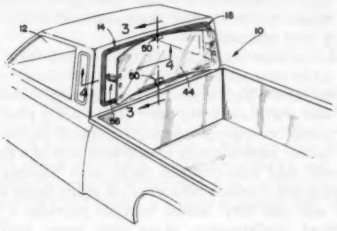
means for removably mounting said glass panel to said fixed-frame structure, said means being positioned intermediate said free ends thereof, thus allowing said free ends of said

glass panel to be individually bent to an open-wing position;

a sealing means mounted to said fixed frame structure for sealing engagement with said glass panel; and

detachable latching means mounted between said fixed-frame structure and said glass panel, said detachable-latching means being secured to each free end of said glass panel and detachably connected to said fixed-frame structure, whereby said glass panel can be fully separated from said window assembly; and

wherein said fixed-frame structure comprises a pair of parallel continuous channel members defining an outer channel and in inner channel, said outer channel being adapted to receive said sealing means and said mounting means, and said detachable-latching means being adapted to be removably connected to said inner channel.

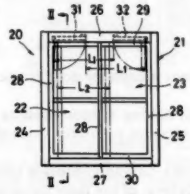


4,281,477

ROLLER-SUPPORTED CLOSURE HAVING A CLOSURE RETAINER

Hiromitsu Kaminaga, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 39,120, May 15, 1979, abandoned. This application Sep. 13, 1979, Ser. No. 75,025
Claims priority, application Japan, May 24, 1978, 53-69020
Int. Cl.³ E05D *13/00*
U.S. Cl. 49—453 **16 Claims**



1. A closure unit for a building wall opening comprising, in combination:

(a) a frame adapted to be installed in the opening and including a header for being disposed at the upper part of the opening, said header having a horizontal base plate and at least one flange extending downwardly from said base plate;

(b) a closure member within said frame and having a pair of rollers movably mounting said member on a horizontal rail surface on said frame in an axially trapped manner, said closure member being disposed adjacent to said flange and having a clearance between its upper edge and said base plate enabling the closure member to be raised sufficiently to enable said rollers to be placed on and to be removed from the rail surface;

(c) a blocking member pivotably supported on said header and pivotable between a first horizontal position and a second vertical position, said blocking member when in said first position being situated above and spaced from said upper edge of said closure member by a distance that is somewhat less than said clearance, said closure member being thereby confined to upward movement for said distance within said frame and being thereby prevented from being removed from said frame; and

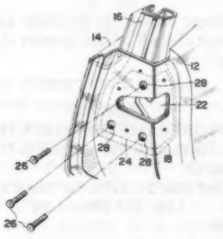
(d) means on said header for releasably retaining said blocking member in said first position, said blocking member, when released from said retaining means, being angularly movable by gravity to said second position in which said blocking member permits said closure member to be lifted well into said clearance for removal from said frame.

4,281,478

VEHICLE DOOR STRUCTURE

Sumio Inami, Yokohama, Japan, assignor to Nissan Motor Company Limited, Kanagawa, Japan

Filed Aug. 9, 1979, Ser. No. 64,982
Claims priority, application Japan, Aug. 29, 1978, 53-118880[U]
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—503 **8 Claims**



1. A vehicle door structure adapted to be locked to vehicle body by a door lock mechanism, comprising a door inner panel and a sash component terminating at its lower end in a reinforcing section formed therein wherein said reinforcing section has a configuration conforming to a configuration of said inner panel in the area of attachment to the panel to provide a low waist line and thereby a wider field of vision while maintaining sufficient connecting strength between said sash component and said door inner panel when said reinforcing section is secured thereto, a door lock recess formed within said reinforcing section for reception of a door lock; and means for securing said reinforcing section and door lock mechanism to said inner panel with said door lock recess in registration with a corresponding opening in said inner panel.

4,281,479

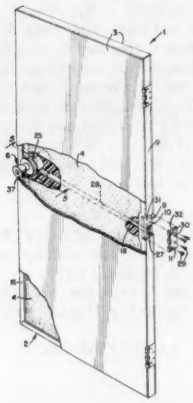
INTERNAL DOOR LOCK SECURITY REINFORCEMENT AND METHOD OF ASSEMBLY

Ronald R. Daus, McKenzie, Tenn., assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 17, 1980, Ser. No. 131,162
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—503 **11 Claims**

1. In a hollow door having a core filler bounded by two panels and a peripheral edge channel including opposite lock and hinge channels, said panels and lock channel having a lock provision, a lock set within said lock provision and having a lock case between said two panels, said hinge channel having a hinge provision horizontally aligned with said lock provision, the improvement comprising, said hinge provision including a hinge mount having an opening, said core filler provided with a bore extending from adjacent said lock case to said hinge mount opening, an elongated spanner element within said bore having an inner end juxtaposed said lock case and an outer end flush with said hinge mount, a positioner element respectively

engaging said lock case and spanner element inner end and means overlying said spanner element outer end and fixed



relative said hinge mount to preclude axial displacement toward said hinge channel of said spanner element, positioner element and lock case.

4,281,480

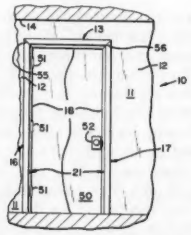
DOORFRAME CONSTRUCTION

Alan C. Wendt, Barrington, Ill., assignor to U.S. Gypsum Company, Chicago, Ill.

Filed Jun. 21, 1979, Ser. No. 50,833

Int. Cl.³ E06B *1/04*

U.S. Cl. 49—504 **16 Claims**



1. A doorframe assembly comprising in combination:

metal backer jamb members adapted for attachment to opposite sides of a door opening, said members being of substantially the same structural shape having a web portion connecting free legs forming a generally U-shape, said free legs being adapted for fastening on opposite wall face surfaces adjacent a door opening in hollow-wall partition construction, the free legs terminating in lip portions wherein at least one metal backer jamb member has a cutout portion adapted for coaction with a lockset;

metal header member adapted for attachment to an upper horizontal side of a door opening, said member being of substantially the same structural shape as the metal backer jamb members;

vinyl jamb members snap-engaged to the metal backer jamb members, said vinyl jamb members being of substantially the same structural shape having a generally U-shape comprising a body portion covering the web portion of the metal backer jamb members, said body portion comprising a generally centrally located doorstop portion with adjacent walls extending in opposite directions from said doorstop, said body portion having flanges extending from opposite edges of the walls, the flanges terminating in inturned nib portions snap-engaging said lip portions of the metal backer jamb members whereby said metal backer jamb members are enveloped by said vinyl jamb members;

vinyl header members snap-engaged with the metal header member, said vinyl header member being of substantially the same structural shape as said vinyl jamb members;

hinge plate means for supporting a door, said hinge plate means attached to a wall of said vinyl jamb member positioned within a recess along said wall at the hinge side of a door opening;

a strike plate means for coaction with a door lockset, said strike plate means attached to a wall of a vinyl jamb member at the lock side of a door opening within a recess of said wall, said strike plate means being attached in positional correspondence with a cutout portion of a metal backer jamb member at said lock side of a door opening;

wherein said snap-engaged vinyl jamb members provide a finished and mortised conformation at the hinge side and lock side, and said vinyl header member provides a finished and mortised conformation along said upper horizontal side, wherein said vinyl jamb members and vinyl header members are mitered at their intersection.

4,281,481

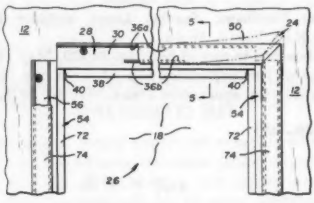
FIRE RESISTANT ALUMINUM DOOR FRAME ASSEMBLY

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jan. 18, 1980, Ser. No. 113,429

Int. Cl.³ E06B *1/12*

U.S. Cl. 49—504 **23 Claims**



1. A fire resistant aluminum door frame assembly comprising;

a partition wall having a door opening therethrough with stud means adjacent opposing vertical sides of the opening;

a header assembly having expansion cavity means at opposite upper portions of the door opening, a channel-shaped aluminum header member extending between the cavity means and screw attached to said partition wall along the upper horizontal side of the door opening, aluminum snap-engageable trim members concealing said screw attachment, said trim members having upper and lower snap-engageable legs engaging upper and lower snap-engageable portions of said header member, the lower snap-engageable portion terminating short of opposite ends of the header member, said header member including doorstop means projecting downward from, and extending for substantially the full width of, the header member;

opposing jamb assemblies disposed along opposing sides of said door opening and extending downwardly from said header assembly below the expansion cavity means said jamb assembly having channel-shaped aluminum jamb members screw attached to said partition wall,aluminum snap-engageable trim members concealing said screw attachment, said trim members having snap-engageable legs engaging snap-engageable portions of said jamb mem-

bers, said jamb members including doorstop means projecting outward from, and extending for substantially the full height of, the jamb members, and, an engageable longitudinal slot, adjacent said doorstop, having a mortising trim strip engaged therein;

a strike assembly disposed along one jamb assembly at said engageable slot for accommodation of lockset means of a door member, said strike assembly having an exterior aluminum strike plate members with an opening therethrough permitting entrance of a bolt from a lockset, and further having an interior steel angle member separately screw attached to said jamb member, said steel angle providing retentative engagement for a bolt from a lockset;

at least one hinge assembly disposed along the opposite jamb assembly at said engageable slot, said hinge assembly having an exterior steel hinge plate screw attached to an interior steel back-up plate, the steel back-up plate being separetely screw attached to said jamb member and,

a door member supported within said door opening by said hinge assembly and having a lockset engaging said strike assembly;

whereby upon exposure to extreme heat, the door frame assembly accommodates expansion of the header and jamb assembly without buckling, and said strike and hinge assemblies respectively maintain said door support and lockset engagement of the door member, wherein said door frame assembly attains a fire rating.

4,281,482

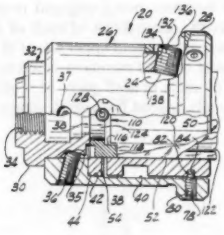
SPINDLE NOSE FOR MACHINE TOOLS

Harold T. Rutter, Kirkwood, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Oct. 4, 1979, Ser. No. 81,625

Int. Cl.³ B23B *5/22, 31/00;* B24B *41/04*

U.S. Cl. 51—168 **16 Claims**



1. Means to mount a rotatable member having an axis of rotation so that the axis of rotation of the rotatable member is fixed and aligned from end-to-end the rotatable member having a first portion for mounting it and a portion extending therefrom to a free end, said mounting means comprising a rotatable mounting assembly for receiving and supporting the rotatable member for rotation about a fixed and aligned axis, said mounting assembly including a first member having a cylindrical chamber defined by a cylindrical surface therein, a second member mounted in the cylindrical chamber and having a cylindrical outer surface, means including a portion of the cylindrical outer surface adjacent one end thereof engageable with one end of the cylindrical chamber surface locking said one end of said second member in the cylindrical chamber, said second member extending in said chamber from said locked end to a free opposite end adjacent to the opposite end of said chamber, means for mounting the first portion of the rotatable member in the second member, and means on the first member engageable with the second member adjacent to the free opposite end thereof, said means on the first member including means to change the position of said free opposite end thereof relative to the one end thereof, said means including at least two pairs of opposed members threadedly positioned in the first member and adjustable into engagement with the second member to predeterminately move the free opposite end of the second member relative to the locked end thereof.

4,281,483

METHOD OF CURVING SUPPORTING SURFACES OF DRIVING BELT ELEMENTS

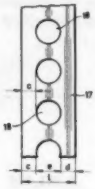
Alexandre Horowitz, Eindhoven; Rudolf J. G. A. van der Hoorn, Nuenen, and Jozef W. M. Kummeling, Leende, all of Netherlands, assignors to Volvo Car B.V., Helmond, Netherlands

Filed Jan. 26, 1979, Ser. No. 7,470

Claims priority, application Netherlands, Jan. 31, 1978, 7801101

Int. Cl.³ B24B *1/00, 21/16*

U.S. Cl. 51—328 **10 Claims**



1. A method of making curved supporting surfaces on a consecutive range of transverse elements to be arranged on a driving belt, comprising the steps of curving by one operation both in the running direction of the belt and in a direction at right angles thereto; said curvings are made simultaneously on a ring of transverse elements arranged side by side as a circular row, guiding a grinding band across the joint supporting surfaces on the transverse elements to be curved, forming the radius of curvature of the curve in the running direction of the belt defined by the diameter of the circular row of elements, producing the curving at right angles thereto simultaneously for providing the grinding band with a higher material-removing capacity on the outer sides than in the middle portion and producing continuous curving which is the same for all plates.

4,281,484

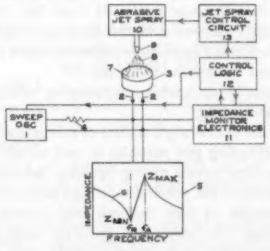
SYSTEM FOR PRECISELY AND ECONOMICALLY ADJUSTING THE RESONANCE FREQUENCE OF ELECTROACOUSTIC TRANSDUCERS

Frank Massa, Cohasset, Mass., assignor to The Stoneleigh Trust, Cohasset, Mass., Fred M. Dellorfano, Jr. & Donald P. Massa, Trustees

Filed Feb. 11, 1980, Ser. No. 120,712

Int. Cl.³ B24B *49/00*

U.S. Cl. 51—413 **9 Claims**



1. In combination in an apparatus for selectively adjusting the resonance or anti-resonance frequency of an electroacoustic transducer by the removal of material from a specified surface region of the vibatile element portion of said electro-

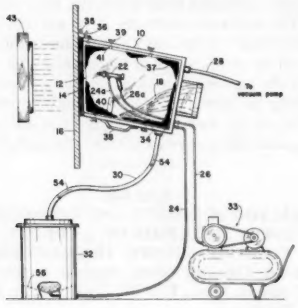
acoustic transducer, means for propelling a spray of abrasive particles, means for controlling the intensity of said spray, means for controlling the distribution pattern of said abrasive particles being propelled by said spray, means for supporting said transducer vibratile element and said abrasive particles spray propelling means, said support means characterized in that said specified surface portion of said vibratile element is exposed to the spray pattern of said abrasive particles, electronic circuit means for selectively monitoring the resonance or anti-resonance frequency of said electroacoustic vibratile element while said specified surface of said vibratile element is being exposed to said spray of abrasive particles, said electronic circuit means characterized in that it includes control means for terminating the exposure of said specified surface portion of said vibratile element to said spray of abrasive particles when the resonance or anti-resonance frequency of said vibratile element reaches a specified value.

4,281,485

PORTABLE SUBSTRATE ETCHING APPARATUS AND PROCESS

Herman T. Charity, III, 221 Rengstorff Ave., Mountain View, Calif. 94043

Filed Nov. 26, 1979, Ser. No. 97,513
Int. Cl.[3] B24C *3/06, 1/04*
U.S. Cl. 51—425 **13 Claims**



1. Apparatus for etching designs in a substrate, which comprises:

(a) a transparent casing having an opening to be positioned against the substrate,

(b) a sealing means around the opening of said casing and which is pressed against the substrate when the opening is positioned against the substrate,

(c) a manually directable sandblasting nozzle positioned inside said casing,

(d) means for delivering a stream of compressed air containing sandblasting grit particles to said nozzle,

(e) a protective screen having openings which allow visual observation of the substrate through said screen and allow grit particles to pass through said screen, said screen preventing ricocheting grit particles from the substrate from contacting said casing directly, said screen being positioned between said sandblasting nozzle and said transparent casing, and

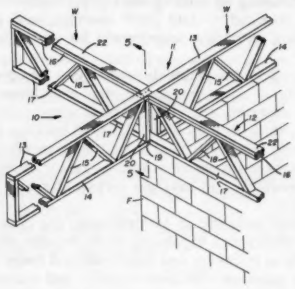
(f) means for withdrawing air from said transparent casing at a rate at least slightly in excess of the rate of delivery of the compressed air to said nozzle.

4,281,486

CANTILEVERED CROSS TRUSS CONSTRUCTION

Bertram Zusman, 4112 Montecello Blvd., Youngstown, Ohio 44505

Filed Dec. 14, 1979, Ser. No. 103,613
The portion of the term of this patent subsequent to Mar. 25, 1997, has been disclaimed.
Int. Cl.[3] E04B *1/34*
U.S. Cl. 52—73 **4 Claims**



1. A cantilevered cross truss construction comprising several pairs of crossed horizontally disposed truss members, each truss member including vertically spaced top and bottom chord members and interconnecting web members, one of each pair of truss members being of a greater height than the other, a first one of each of said pairs of truss members having notches in its lower chord with said web members arranged to enable said first one of each of said pairs of truss members to be positioned over a second one of each of said pairs of truss members, the notches in the lower chord of said first one of each of said pairs of truss members being engaged over portions of the lower chord in the second one of each of said pairs of truss members and a spacer on said upper chord of the second one of each of said pairs of truss members whereby the top and bottom surfaces of each of said pairs of truss members lie on common vertically spaced horizontal planes.

4,281,487

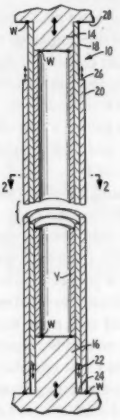
ENERGY ABSORBING LOAD CARRYING STRUT AND METHOD OF PROVIDING SUCH A STRUT CAPABLE OF WITHSTANDING CYCLICAL LOADS EXCEEDING ITS YIELD STRENGTH

Karl S. Koller, 2807 Estates Ave., Pinole, Calif. 94564

Filed Aug. 6, 1979, Ser. No. 64,103
Int. Cl.[3] E04B *1/98;* E04C *3/30*
U.S. Cl. 52—167 **13 Claims**

1. An energy absorbing strut capable of withstanding cyclical tension and/or compression loads exceeding its yield strength, said strut comprising: a malleable column, a bolster at either end of the column, said bolsters having a yield strength greater than that of the column and being secured to the ends of the column for imparting tension and compression loads thereto; and bending moment resisting means extending over

the full length of the column and past the ends thereof and into engagement with said bolsters to resist bending moments im-



parted to the column due to eccentric loading thereof and transmit such moments to the bolsters.

4,281,488

MULTIPANE WINDOW WITH ADJUSTABLE LIGHT ADMISSION

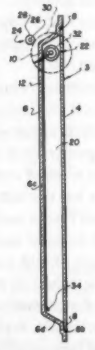
Raymond Resibois, Virton, Belgium, assignor to Para-Press S.A., Luxembourg

Continuation of Ser. No. 760,022, Jan. 17, 1977, abandoned. This application Feb. 7, 1980, Ser. No. 119,425

Claims priority, application Luxembourg, Jan. 20, 1976, 74212

Int. Cl.³ E06B *3/66*

U.S. Cl. 52—173 R **4 Claims**



1. A window and shade combination comprising, a first transparent member having a planar portion, a peripheral side wall portion extending at an angle to said planar portion and around the periphery thereof defining a trough shaped space with said planar portion, and a peripheral flange portion extending from said peripheral side wall portion around the periphery thereof and substantially parallel to said planar portion, said peripheral flange portion having a peripheral recess, said planar portion, said peripheral side wall portion and said peripheral flange portion all being transparent, a planar second transparent member peripherally connected to said peripheral flange portion of said first transparent member and disposed within said peripheral recess to close said trough shaped space, and a shade member connected in said trough shaped space and movable therein, said first transparent member made of a single sheet of transparent material, said peripheral flange portion having a thickness of said sheet of transparent material whereby said combination can be installed into windows adapted to receive a single thickness of transparent material.

4,281,489

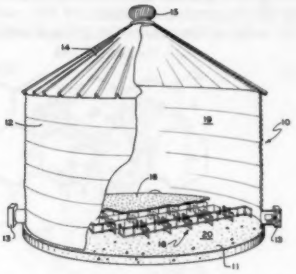
FLOOR SUPPORT FOR GRAIN DRYING AND STORAGE BIN

Daniel R. Kallestad, and David F. Barr, both of Blue Earth, Minn., assignors to Continental Agri-Services, Inc., Blue Earth, Minn.

Filed Sep. 24, 1979, Ser. No. 78,294

Int. Cl.³ E04H *7/00*

U.S. Cl. 52—192 **12 Claims**



1. A floor support for supporting a perforated floor in a grain drying and storage bin comprising a floor support unit having:

at least three vertically disposed tubular members, said tubular members being parallel to each other and disposed in a non-linear pattern to enable said floor support unit to be free standing; and

first and second brace members for connecting said tubular members together to form said floor support unit, said first brace members being secured to each of said tubular members near the upper ends thereof in a load bearing position with respect to the perforated floor and said second brace members being secured to each of said tubular members near the lower ends thereof, said first brace member having a generally rectangular cross-section with opposing narrow side surfaces and opposing wide side surfaces, one of said narrow side surfaces being horizontally disposed along the upper ends of said tubular members for load bearing engagement with the perforated floor.

4,281,490

SILO

Patrick Foody, 280 Main Rd., Hudson, Quebec, Canada

Continuation-in-part of Ser. No. 914,043, Jun. 9, 1978, abandoned. This application Jun. 12, 1979, Ser. No. 47,948

Int. Cl.³ E04H *7/22*

U.S. Cl. 52—236.1 **9 Claims**

1. A silo having a plurality of vertically arranged cells for the storage of particulate materials, said silo comprising:

(a) a foundation;

(b) a plurality of spaced apart rigid vertical columns of reinforced cast-in-place concrete supported by said foundation;

(c) each column including a plurality of integral load bearing longitudinally extending webs radiating outwardly therefrom and being generally co-extensive therewith each web extending in a direction generally toward a respective one of the webs of the column next adjacent thereto, such that each of the webs of each column is disposed in opposed, horizontally spaced relationship with an associ-

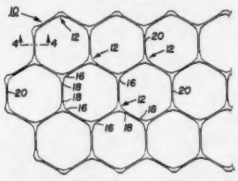
ated one of the webs of one of the next adjacent columns thereby defining a plurality of web pairs;

(d) each such web terminating along a vertically disposed marginal edge;

(e) a plurality of vertically disposed diaphragm panel structures, each of which extends between the vertically disposed marginal edges of a respectively associated one of the web pairs each diaphragm panel structure comprising a plurality of panel sections in superposed spaced relation to one another;

(f) each diaphragm panel section having a pair of vertically directed marginal sides each of which is connected in abutting relation to an associated one of the vertically disposed marginal edges of the web pairs in such a manner that vertically directed thrust components applied to the diaphragm panel sections are transmitted laterally to the marginal edges of said load bearing webs so that the resulting vertical loadings are transmitted to the silo foundation via the vertical columns;

(g) the webs of the columns and the associated diaphragm



panel sections being constructed and arranged to withstand laterally directed forces applied thereto, in use, by the materials stored in the silo;

(h) each diaphragm panel section including a plurality of laterally extending elements which project from its marginal sides into the associated webs of the reinforced concrete columns, said laterally extending elements being of a size and number such that substantially all of the vertically directed thrust components applied to the panel sections are taken up by the laterally extending elements and transmitted to the load bearing webs of the columns, said laterally extending elements being in load transmitting relation with one another to provide said connection and structural continuity between said webs and the panel sections and to assist in providing said webs with the necessary structural strength to withstand the stresses encountered during use; and

(i) said columns being located in a pre-selected array such that said columns and the diaphragm panel sections associated therewith define an array of adjacent vertically arranged storage cells.

4,281,491

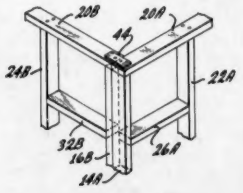
MODULAR WALL FRAMING

Ernest A. Schonert, 6536 Via Corral, Anaheim, Calif. 92807

Filed Feb. 2, 1979, Ser. No. 9,381

Int. Cl.[3] **E04B** *2/70*

U.S. Cl. 52—281 **8 Claims**



1. In a wall construction of the type having horizontal sole plates resting on a foundation or other supporting structure and a series of vertical studs extending from said sole plates, the improvement which comprises:

said wall construction being divided into individual modular sections, each individual modular section including

a sole plate, said sole plate capable of being fastened to said foundation or other supporting structure, said sole plate having a first and and a second end;

a top plate, said top plate having a first end and a second end;

a first vertical end stud, said first vertical end stud having a top end and a bottom end;

a second vertical end stud, said second vertical end stud having a first end and a second end;

said bottom end of said first vertical end stud attaching to said first end of said sole plate such that said first vertical end stud rests on and is perpendicular to said sole plate;

said bottom end of said second vertical end stud attaching to said second end of said sole plate such that said second vertical end stud rests on and is perpendicular to said sole plate and parallel to said first end stud;

said first end of said top plate resting on and attaching to said top end of said first end stud, and said end of said top plate resting on and attaching to said top end of said second stud, said sole plate, said top plate, said first end stud and said second end stud all lying in the same plane and mutually forming a quadrilaterial;

an intermediate vertical member,

said intermediate vertical member extending between said top plate and said sole plate and lying in the same plane as and parallel to said first and said second end studs,

a first plurality of horizontal cross braces, each of said first plurality of cross braces extending substantially perpendicular to said first end stud and attached to said first end stud and said intermediate vertical member,

a second plurality of horizontal cross braces, each of said second plurality of cross braces extending substantially perpendicular to said second end stud and attached to said second end stud and said intermediate vertical member,

said intermediate vertical member comprising at least one interior vertical stud,

individual modular sections being joined together to form said wall construction and including at least one corner in said wall construction comprising two of said modular sections joined together such that one of said first or second vertical end studs of one of said modular sections forming said corner has one side abutted against the outer surface of one of said first or said second vertical end studs of the other of said modular sections forming said corner, and a portion of each of said plurality of horizontal cross braces which are attached to said abutting vertical end stud of said one of said modular sections forming said corner directly overlays the vertical end stud of said other modular section and (are coplaner with) is in an essentially horizontal alignment with one of the horizontal cross braces of the other modular section forming said corner such that said corner contains only two vertical end studs one from said one of said pair of modular sections and the other from said other of said modular sections forming said corner; and

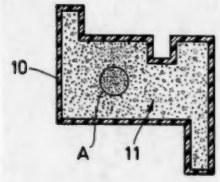
attaching means for attaching said first end stud, said second end stud and said intermediate vertical member to said sole plate and said top plate, for attaching said cross braces to said first end stud, said second end stud and said intermediate vertical member, and said abutting studs at said corners to each other.

4,281,492

SECTIONAL CONSTRUCTION STRIP, E.G. FOR THE PRODUCTION OF WINDOW FRAMES

Karl Schock, Schorndorf, and Lothar Frank, Plüderhausen, both of Fed. Rep. of Germany, assignors to Schock & Co., Fed. Rep. of Germany

Filed Jun. 19, 1979, Ser. No. 50,129
Int. Cl.³ E06B 1/20
U.S. Cl. 52—309.9 **6 Claims**



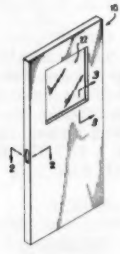
1. A sectional construction strip comprising a tubular section of thermosoftening plastics material, preferably PVC and a fill which comprises a matrix of polymerized methylmethacrylate with hollow silicate spherules as a filler, said methylmethacrylate where in contact with said plastics material being cross linked to create the bond between the material of the fill and the material of the tubular section.

4,281,493

ATMOSPHERIC RESISTANT DOORS

William V. Pitt, P.O. Box 7622, Waco, Tex. 76710

Continuation of Ser. No. 623,094, Oct. 16, 1975, Pat. No. 4,068,431. This application Apr. 27, 1977, Ser. No. 791,426
Int. Cl.³ E04B 1/62; E04C 2/26
U.S. Cl. 52—309.11 **18 Claims**



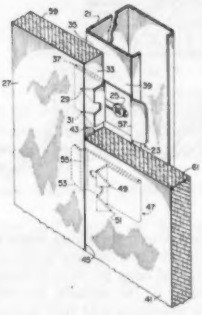
1. A door comprising a pair of plates and a one-piece, integral, continuous, relatively thin walled stile and rail collar of a generally rectangular exterior outline, said collar being of an inwardly opening generally U-shaped cross-sectional configuration, said collar being defined by a bight and opposite spaced generally parallel faces, each face and bight having interior and exterior surfaces collectively imparting said generally thin walled and U-shaped cross-sectional configuration to said collar, said entire collar including said bight and faces between said interior and exterior surfaces thereof being constructed from an admixture of unfoamed polymeric resin and reinforcing material resistant to corrosive and/or high humidity environments, said exterior surfaces of said bight and faces being devoid of exteriorly exposed reinforcing material, said stile and rail collar being completely cured prior to the securement of said plates thereto whereby warping is prevented, each of said plates being of a generally rectangular outline defined by inner and outer surfaces and a peripheral surface therebetween corresponding in size and shape to the rectangular exterior outline of said collar, each of said plates being constructed from an admixture of polymeric resin and reinforcing materials resistant to corrosive and/or high humidity environments, each plate outer surface being devoid of exteriorly exposed reinforcing material, polymeric resin material sandwiched between each plate inner surface and the exterior surface of an associated one of said collar faces for adhesively bonding said plates to said collar faces exterior surfaces, said polymeric resin bonding material being resistant to corrosive and/or high humidity environments, and each said plate peripheral surface being defined by terminal edges of each plate disposed generally flush with said collar bight exterior surface.

4,281,494

CONCEALABLE WALLBOARD FASTENERS AND WALLS ASSEMBLED THEREWITH

Roger N. Weinar, 168 Woodside Ave., Buffalo, N.Y. 14220

Filed Sep. 29, 1978, Ser. No. 947,077
Int. Cl.³ E04B 1/38
U.S. Cl. 52—483 **21 Claims**



1. A fastener for use with other such fasteners, to be held to abutting ends of wallboard panels for installation of such panels in abutting linear relationship with each other, with the major visible surfaces of such panels, when installed, being aligned, and for resiliently fastening such panels to framing members, which comprises a first part, suitable for fastening to and against the framing member, a second part, substantially parallel to and overlying a part of said first part and farther from the framing member, when installed, than the first part, an intermediate section, connecting the first and second parts so that they can move relatively, a web extending from the second part and away from the first part and the framing member, an impaling part, extending from the web and in a direction toward the intermediate section, for insertion into an end of a wallboard panel, and spacing means at the first part of the fastener for spacing said first part away from a wallboard panel abutting that panel into which the impaling part is inserted, so as to align major visible surfaces of the adjoining wallboard panels so that they are coplanar.

4,281,495

INSULATED STRUCTURE

Yun S. Lee, 475 Atkinson Dr. #608, Honolulu, Hi. 96814

Filed Nov. 14, 1979, Ser. No. 94,114
Int. Cl.³ E04C 1/10, 1/30; E04B 1/40
U.S. Cl. 52—584 **6 Claims**

1. A modular, air-tight insulated structure for enclosing a refrigerated area fabricated from a plurality of roof, floor, and wall modules, each of said wall modules comprising:

a structurally rigid frame means that includes spaced apart top and bottom members connected to spaced apart side members;

a first planar sheathing material on one side of said frame and

a second planar sheathing material on the opposite side of said frame to define an enclosed interior space;

insulating media located within the interior space defined by said sheathing material and said frame;

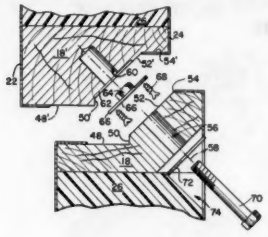
each of said wall modules connected to its adjacent wall module through a joint interface that includes:

a first sealing surface joining the exterior side of said module and aligned substantially perpendicular to the plane of said module;

a second sealing surface joining said first sealing surface and aligned substantially parallel to the plane of said module;

a third sealing surface joining said second sealing surface and aligned at an oblique angle relative to the plane of said module;

a fourth sealing surface joining said third sealing surface and aligned substantially perpendicular to the plane of said module and substantially parallel to said first sealing surface;



said first and second planar sheathing material each including marginal edge portions that are bent out of the plane of the module with said edge portions substantially perpendicular to the plane of the module, the edge portions of said first sheaths overlying said first sealing surfaces and the edge portions of said second sheaths overlying said fourth sealing surfaces; and

fastener means extending along an axis substantially normal to said third sealing surface to apply a direct sealing compression force to said third sealing surfaces to effect direct surface-to-surface contact therebetween, a portion of said direct sealing compression force resolved into sealing forces on the remaining parts of said first, second, and fourth sealing surfaces, the sealing forces on said first and fourth sealing surfaces placing said edges of said first and second sheaths under compression therebetween.

4,281,496

METHOD OF FORMING CONCRETE FLOORS AND PRODUCT OF THE METHOD

Jan O. Danielsson, 50 Almenar Dr., Greenbrae, Calif. 94904

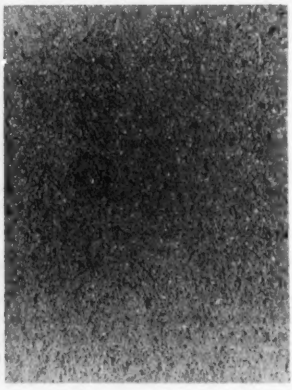
Filed Jul. 6, 1979, Ser. No. 55,174

Int. Cl.[3] E04B *5/32*

U.S. Cl. 52—612 **13 Claims**

1. In a method for forming a concrete floor, the steps comprising depositing wet concrete mix and roughly leveling the concrete and then floating the surface of the concrete to produce a more level surface, the step of depositing the concrete being performed according to a predetermined pattern selected to form the floor as substantially a monolithic unit, the combination of the steps of depositing, rough leveling and floating the concrete being selected in order to effectively densify the concrete and produce a thin upper layer formed substantially of water, sand and cement, allowing the concrete to stand for a period of at least approximately 24 hours and then removing a thin surface portion from the concrete with a grinder in order to produce a flat, porous surface having a sanded quality.

12. In a method for forming a concrete floor in a large unobstructed area, the steps comprising simultaneously depositing, rough leveling and densifying wet concrete mix with a vibrating screed supported by forms extending along opposite sides of the floor area in order to produce an upper layer of wet concrete with a thin upper layer being formed substantially of water, sand and cement, the simultaneous step of depositing, rough leveling and densifying the concrete being continued across the entire expanse of the area in order to form the concrete floor as a monolithic unit, allowing the concrete to stand



until bleed water has risen to the surface and the concrete is sufficiently set up to support the weight of an operator, then floating the surface of the concrete by means of a power float in order to permit working of concrete having reduced plasticity, allowing the concrete to stand for an additional period of at least approximately 24 hours and then removing a thin surface portion from the concrete with a grinder in order to produce a flat, porous surface having a sanded quality.

4,281,497

COMPOUND BEAM

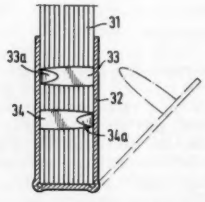
Pekka Luotonen, and Yrjö Tolonen, both of Espoo, Finland, assignors to Valtion Teknillinen Tutkimuskeskus, Finland

Filed May 23, 1979, Ser. No. 41,736

Claims priority, application Finland, Jun. 5, 1978, 781775; Jan. 10, 1979, 790065; Feb. 7, 1979, 790396

Int. Cl.[3] E04C *3/30*

U.S. Cl. 52—730 **6 Claims**



1. A compound beam comprising an elongated non-metallic web member having oppositely disposed side surfaces and an end surface, a substantially U-shaped metallic flange member having leg portions abutting against a part of said oppositely disposed side surfaces of said web member and an end portion connecting said leg portions abutting against said end surface of said web member, each of said leg portions having a tooth portion formed as an integral part thereof extending transversely of said leg portions and penetrating through a substantial portion of the thickness of said web member toward the oppositely disposed leg portion to fixedly attach said flange

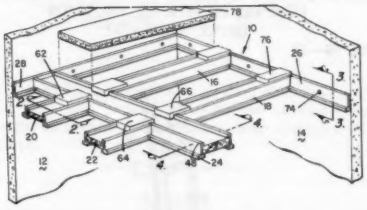
member and said web member, each tooth portion having a length dimension greater than the distance between the opposite side surfaces of said web member and each of said tooth portions having a tip clinched back toward the respective leg portion to which it is attached.

4,281,498

SUSPENDED WOODBEAM CEILING

Gilbert G. Kern, 515 N. Victory Blvd., Burbank, Calif. 91502

Filed Apr. 10, 1979, Ser. No. 28,904
Int. Cl.³ E04B 5/52
U.S. Cl. 52—780 **10 Claims**



1. A unitary beam for a suspended beam ceiling structure, said beam comprising:

first and second beam side members each of said beam side members being L-shaped, said beam side members each having an upwardly facing lip and having a downwardly directed face, and said faces lying in a plane;

a beam center between said beam side members and attached to said beam side members and maintaining said beam side members in a spaced relationship, said beam center having a downwardly directed beam center being spaced above said plane of said faces substantially the same distance as said upwardly facing lips of said beam side members are spaced above said plane;

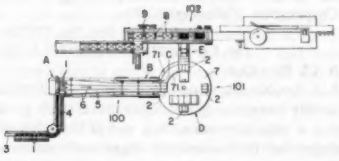
said beam center being made of wood and said beam side members each being made of wood, said beam side members each being rabbeted with said beam center extending into said rabbets and being secured to both of said beam side members within said rabbets whereby said beam is a unitary structure so that said lips are maintained in the same plane.

4,281,499

BOX PACKING MACHINE AND PROCESS

Soichi Koshishiba, Kanazawa, and Gosei Okazaki, Komatsu, both of Japan, assignors to Shibuya Kogyo Co., Ltd., Japan

Filed May 30, 1979, Ser. No. 43,723
Int. Cl.³ B65B 35/50, 61/20
U.S. Cl. 53—445 **26 Claims**



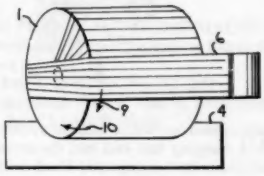
1. A box packing process for packing a box with a group of containers and at least one separator sandwiched between at least two of said containers, comprising a step of inserting at least one separator into a separator holding means mounted in an intermediate box, a step of loading the intermediate box on opposing sides of the separator with containers which are transported in a predetermined number of lines, and a step of transferring the containers and separators thus loaded from the intermediate box into a shipping box as a unit.

4,281,500

WRAPPING APPARATUS AND METHOD

George P. Mueller, Neenah; Urban A. Urban, Menasha; Kermit J. Muenster, Appleton, and Donald A. Ludwig, Hortonville, all of Wis., assignors to Wisconsin Tissue Mills Inc., Menasha, Wis.

Filed Jul. 13, 1979, Ser. No. 57,289
Int. Cl.³ B65B 11/04
U.S. Cl. 53—211 **2 Claims**



1. Apparatus for completely covering a cylindrical object having a longitudinal axis, a curved peripheral surface and spaced end surfaces with a web of wrapping material comprising, in combination:

turntable means adapted for rotation in a generally horizontal plane;

rotatable drive roll means on the turntable means and adapted to drivingly engage the curved peripheral surface of the cylindrical object;

idler roll means on the turntable and spaced from the drive roll means to form a cradle therebetween within which a cylindrical object to be wrapped is carried;

means pivotally supporting the idler roll for movement between a lowered first position and a raised second position;

means for supplying a web of wrapping material to an end surface of the cylindrical object;

means for simultaneously rotating the turntable means and the drive roll means to rotate the cylindrical object in a horizontal plane while simultaneously rotating it about its longitudinal axis and thereby cover the curved peripheral surface and the end surfaces of the cylindrical object with a series of spirally-wound overlapping rows of wrapping material;

means to pivot the idler roll to its raised second position to eject a wrapped cylindrical object from the apparatus

the means for simultaneously rotating the turntable and the drive roll means including a reversible motor arranged to rotate the turntable means and the drive roll means when rotating in a first direction and arranged to drive the means to pivot said idler roll to its raised second position when rotating in a second direction opposite to the first direction.

4,281,501

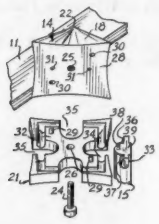
FINGER MOUNTING APPARATUS FOR LOADING GRID

Adam Z. Rydell, 3742 Tree Bark Trail, Decatur, Ga. 30034

Filed Sep. 17, 1979, Ser. No. 76,345
Int. Cl.³ B65B 39/02, 5/08
U.S. Cl. 53—248 **12 Claims**

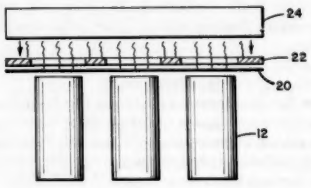
1. In a case loading grid, including a plurality of bars parallel to the motion of containers to be loaded, and a plurality of fingers carried by said bars for directing said containers into discrete sections of a case to be loaded, the improvement comprising a block fixed to one of said bars and having a bottom face, a plate releasably carried by said block generally contiguously with said bottom face, said plate having a config-

uration generally like the configuration of said bottom face, said plate defining finger receiving means for selectively receiving at least one finger of said plurality of fingers and for holding said finger adjacent to said block, said block being generally pyramidal in shape and having four sides, said block defining a bar receiving slot diagonally thereof so that two sides of said block are disposed on each side of said bar, means



for retaining said bar within said bar receiving slot, the apex of said block merging into said bar, the arrangement being such that containers that engage said block will be directed to one face of said block for aligning such container with one of said discrete sections of said case, and said fingers are beneath said block within said plate for directing said container into said one of said discrete sections after said container is aligned with said one of said discrete sections.

4,281,502
CLEAN PACK CARRIER
Lorne Bonkowski, 8302 Encino Ave., Stockton, Calif. 95209
Filed Mar. 8, 1979, Ser. No. 18,505
Int. Cl.³ B65B *21/00, 27/04*
U.S. Cl. 53—398 **5 Claims**



1. A method of forming a carrier for at least one article, said at least one article having a top surface and a sidewall surface comprising the steps of:

positioning a sheet of material which is stretchable when softened but otherwise relatively rigid adjacent the top surfaces of said at least one article;

softening only the portion of said sheet corresponding to said top surface, leaving a non-softened portion of said sheet around said softened portion;

forcing the non-softened portion of said sheet around said sidewall surface sufficiently to cause the softened portion of the sheet to stretch and conform about said top surface and a portion of said sidewall surface of said at least one article thereby forming a closely fitting carrier;

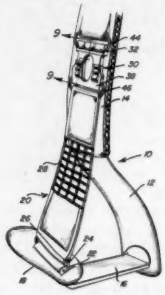
said sheet being made of a thermosensitive plastic, said sheet being positioned adjacent said top surface;

said softening step including a step of heating a portion of said sheet which is to be located adjacent said top surface;

said softening step further including the step of positioning an insulating plate over said sheet prior to said heating step, said insulating plate including an opening corresponding to each said top surface that exposes said portion of said sheet that comprises an area slightly larger than said top surface, and heating each said portion of the sheet which is exposed through an opening in said insulating plate; and

said forcing step including the step of moving said insulating plate towards and about each said top surface, thereby forcing the unheated portion of said sheet about said sidewall surface and drawing the heated and softened portion of the sheet about said top and sidewall surfaces to cover said top surface and grip said sidewall, the plate being moved sufficiently about said sidewall that the sheet firmly grips said sidewall to securely lock it to the sheet.

4,281,503
SAFETY STIRRUP
Kenneth D. Teel, Rte. 2, Box 48, Melrose, N. Mex. 88124
Filed Sep. 19, 1979, Ser. No. 76,928
Int. Cl.³ B68C *3/02*
U.S. Cl. 54—49 **6 Claims**

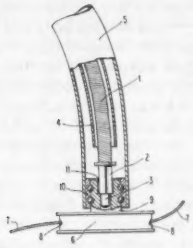


6. A stirrup having a side piece including an upper end and a lower end, said upper end being connected to a stirrup strap, said lower end including a tread extending laterally from said side piece, the tread terminating outwardly in an unsupported free end, a retaining strap releasably connected at one end to said free end, a safety link releasably anchoring the other end of said retaining strap proximate to the upper end of said side piece, said safety link including a projecting member and an apertured receiving member for receiving said projecting member, said projecting member including a plurality of transverse ribs, said apertured receiving member containing a plurality of transverse recesses for cooperation with said ribs, one of said members being connected proximately to said upper end of said side piece and the other said members being connected to said other end of said retaining strap.

4,281,504
AUTOMATIC SAFETY CLUTCH DEVICE FOR FLEXIBLE DRIVES
Brian Moore, Stony Stratford, England, assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Jul. 9, 1979, Ser. No. 55,720
Int. Cl.³ A01D *75/18;* **F16D** *3/56*
U.S. Cl. 56—10.3 **7 Claims**

1. A flexible drive and automatic safety clutch assembly, said assembly comprising a flexible drive shaft connected at one end to a rotary power source and at the other end to a driven member for the transmission thereto of rotational torque from said power source, and means for automatically disconnecting said power source from said driven member in the event of an overload, said disconnection means comprising a socket member mounted for rotation by said flexible drive shaft, a socket axially formed in said socket member, said socket having a non-circular cross-section and axially engaging therein a complementary male member driven by said shaft, the arrangement being such that upon said overload, reduction in the overall

length of said flexible shaft caused by tendency of said shaft to curl up on itself is effective to withdraw said male member axially from said socket thereby to effect said disconnection, and



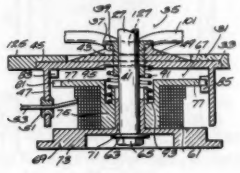
other means for automatically guiding said male member back into said socket upon release of said overload thereby to re-establish the rotary drive connection therebetween.

4,281,505

FILAMENT MOWER WITH FILAMENT ADVANCING MECHANISM

William Fuelling, Jr., Galesburg, and Carl E. Seyerle, Abingdon, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 9, 1980, Ser. No. 157,469
Int. Cl.[3] A01D *55/18;* **A01G** *3/06*
U.S. Cl. 56—12.7 **17 Claims**



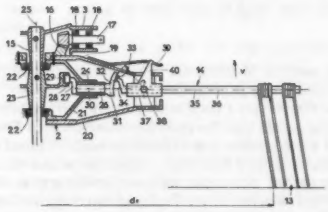
1. A filament mower comprising a wheel supported housing having an upper deck, a prime mover mounted on said upper deck and including an output shaft extending through said upper deck into said housing, a string trimmer head fixed to said output shaft within said housing and including a spool carried on said output shaft for rotary movement relative thereto, a spool cover carried on said output shaft for common rotation therewith, one of said spool and said spool cover being movable axially of said output shaft between an upper position and a lower position, means for limiting movement outwardly of said output shaft of the other of said spool and said spool cover, means for biasing said spool and said spool cover away from each other and means on said spool and on said spool cover for interengaging said spool cover and said spool for common rotation when said one of said spool and said spool cover is in the upper position and in the lower position and for permitting limited relative rotation between said spool and said spool cover during movement of said one of said spool and said spool cover between said upper and lower positions, a lever having an end, means mounting said lever on said housing for pivotal movement between a depressed position engaged with said head so as to displace said one of said spool and said spool cover toward the other against the action of said biasing means, and a raised position out of contact with said head and permitting movement apart of said spool and said spool cover under the influence of said biasing means so as to locate said one of said spool and said spool cover in the upper position, said lever mounting means locating said end rearwardly of said head and in position for engagement by the foot of an operator so as to locate said lever in the depressed position, and means biasing said lever to the raised position.

4,281,506

CONVERTIBLE FORAGE-HANDLING MACHINE

Albert Wattron, Schwenheim, France, assignor to Belrecolt S.A., Marmoutier, France

Filed Mar. 4, 1980, Ser. No. 127,231
Claims priority, application France, Mar. 9, 1979, 79 06913
Int. Cl.[3] A01D *79/00*
U.S. Cl. 56—370 **15 Claims**



1. A convertible forage-handling machine of the type capable of operating in tedding or in windrowing position, comprising a support; at least one carrier mounted on said support for rotation about an axis; a plurality of arms mounted on said carrier for rotation therewith and extending outwardly of said axis, each of said arms including two elongated parts each mounted on said carrier at least for swivelling about its longitudinal axis; means for imparting swivelling motion to one of said parts about its longitudinal axis, including a cam member stationarily mounted on said support and having a cam track, and a cam follower rigidly connected to said one part of each of said arms and tracing said cam track as said carrier rotates about said axis thereof; a plurality of forage-engaging elements attached to the other of said parts of each of said arms; means for mounting said other part of each of said arms on said carrier for displacement between a retracted position corresponding to said windrowing position, in which said forage-engaging elements are spaced a first distance from said axis of said carrier, and an extended position corresponding to said tedding position, in which said forage-engaging elements are spaced a greater second distance from said axis of said carrier; such that said other part extends along a common plane parallel to said axis of said carrier with said one part both in said extended and said retracted position thereof; and cooperating motion-transmitting elements rigid with said parts of each of said arms and in constant contact with one another in and intermediate said retracted and extended positions of said other part of each of said arms and operative for transmitting the swivelling motion of said one part to said other part only in said retracted position of said other part to lift the forage-engaging elements thereof out of engagement with the previously gathered forage at one zone of the orbiting trajectory of said forage-engaging elements about said axis of said carrier and to substantially lower the forage-engaging elements in contact with additional forage at another zone of said trajectory.

4,281,507

FRICTIONAL OPEN-END SPINNING METHOD AND APPARATUS

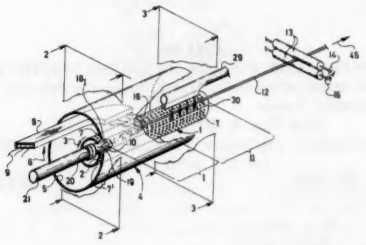
Stanislav Dídek; Ludvík Fajt; Jaroslav Štorek; Jiří Andres; František Čada, and Marie Marková, all of Ústí nad Orlicí, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed May 17, 1979, Ser. No. 40,132

Claims priority, application Czechoslovakia, May 17, 1978, 3174-78

Int. Cl.[3] **D01H** *1/12, 7/882*

U.S. Cl. 57—58.89 **32 Claims**



1. In a method of frictional spinning based upon the open-end principle, comprising depositing continuously supplied separated fibers onto a frictional carrying surface provided on a revolving carrier and designed for conveying the fibers to the mouth of a wedge-like gap defined by said frictional carrying surface and a second frictional surface provided on a second revolving carrier moving in said wedge-like gap in the opposite direction relative to the frictional carrying surface, twisting the fibers to yarn in the wedge-like gap due to the contact with said frictional surfaces, and withdrawing the yarn from said gap in a lateral direction while preventing twist propagation, the improvement wherein the wedge-like gap has a yarn preforming region followed by a yarn finishing region, the fibers supplied by the frictional carrying surface into the wedge-like gap are transferred, in the yarn preforming region, immediately downstream of the mouth of the wedge-like gap, by the action of a first force, onto said second frictional surface, from which the fibers after having left the wedge-like gap, are transferred again by the action of a second force to said frictional carrying surface upstream of the mouth of said wedge-like gap, whereby the fibers are positively caused to circulate in the yarn preforming region.

4,281,508

YARN BRAKE MECHANISM

Johannes Frentzel-Beyme, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,419

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914656

Int. Cl.[3] **D01H** *13/10, 7/86;* **B65H** *59/22;* **D01H** *15/00*

U.S. Cl. 57—279 **10 Claims**

1. A yarn brake for applying tension to a moving yarn comprising:

a brake housing having a vertically-extending passageway therethrough for receiving a yarn moving in a predetermined direction;

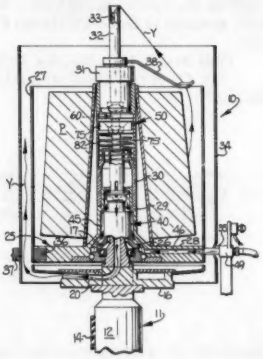
a braking body movably positioned within said passageway of said brake housing and being of predetermined dimensions allowing the passage of the yarn through said passageway and having upper and lower braking surfaces thereon;

a stationary member positioned in an upper portion of said passageway of said brake housing above said braking body and having a vertically-extending aperture therethrough and a downwardly-facing braking surface around said aperture for passage of the yarn therethrough and for cooperating and being engageable with said upper braking surface of said braking body;

a movable member positioned for longitudinal axial movement in a lower portion of said passageway of said brake housing below said braking body and having a vertically-extending aperture therethrough and an upwardly-facing braking surface around said aperture for passage of the yarn therethrough and for cooperating and being engageable with said lower braking surface of said braking body;

means operatively associated with said movable member for biasing said movable member upwardly toward said stationary member and into a position in which said braking surfaces of said braking body are in braking engagement with said braking surfaces of said stationary and movable members to apply tension to the yarn and for allowing downward movement of said movable member under the influence of a displacing force greater than the biasing force for separation of said braking body from said stationary and movable members for threading of yarn through said yarn brake; and

intercepting means mounted in said passageway of said brake housing and being constructed and positioned for receiving and holding said braking body, upon downward movement of said movable member during yarn threading, in a position in which said braking surfaces of said



braking body and said stationary and movable members are out of engagement, but remain substantially aligned, for proper return to braking engagement after the yarn threading and upon upward movement of said movable member.

8. In a spindle assembly of a textile yarn processing machine, especially a two-for-one twister, having a hollow spindle defining an axial yarn passageway extending therethrough and including pneumatic threading mechanisms for selectively creating a pneumatic flow in a predetermined direction through said yarn passageway to automatically thread a yarn therethrough during a thread-up operation; the combination therewith of an improved yarn brake for applying tension to a moving yarn passing through said yarn passageway during normal operation and to facilitate pneumatic threading of the yarn through sad passageway during a threading-up operation, said yarn brake comprising

a braking body movably positioned within said passageway of said spindle and being of predetermined dimensions allowing the passage of the yarn through said passageway and having upper and lower braking surfaces thereon;

a stationary member positioned in said passageway of said spindle above said braking body and having a vertically-extending aperture therethrough and a downwardly-facing braking surface around said aperture for passage of the

yarn therethrough and for cooperating and being engageable with said upper braking surface of said braking body;

a movable member positioned for longitudinal axial movement in said passageway of said spindle below said braking body and having a vertically-extending aperture therethrough and an upwardly-facing braking surface around said aperture for passage of the yarn therethrough and for cooperating and being engageable with said lower braking surface of said braking body;

spring means operatively associated with said movable member for biasing said movable member upwardly toward said stationary member and into a position in which said braking surfaces of said braking body are in braking engagement with said braking surfaces of said stationary and movable members to apply tension to the yarn, said spring biasing means applying a force in opposition to and less than the force of the pneumatic flow created by said pneumatic threading mechanisms for allowing downward movement of said movable member under the influence of the pneumatic flow selectively created by said pneumatic threading mechanisms for separation of said braking body from said stationary and movable members for threading of yarn through said yarn brake; and

intercepting means mounted in said passageway of said spindle and being constructed and positioned for receiving and holding said braking body, upon downward movement of said movable member during yarn threading, in a position in which said braking surfaces of said braking body and said stationary and movable members are out of engagement, but remain substantially aligned, for easily returning to braking engagement after the yarn threading and upon upward movement of said movable member.

4,281,509

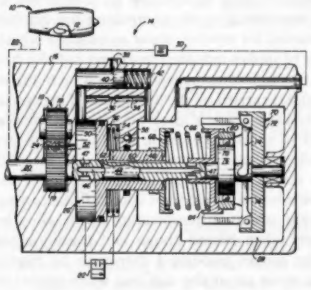
FUEL CONTROL SYSTEM

Charles H. La Grone, Phoenix, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 743,387, Nov. 19, 1976, abandoned. This application Jan. 31, 1979, Ser. No. 8,026

Int. Cl.³ F02C *7/26, 9/32*

U.S. Cl. 60—39.02 **13 Claims**



3. In a method for controlling fuel flow to a gas turbine engine during a start-up period encompassing acceleration of the engine to approximately its rated speed, wherein the improvement comprises the step of:

adjusting fuel flow to the engine in relatin to the cumulative number of revolutions of the engine during said start-up period.

4,281,510

GAS TURBINE PLANT

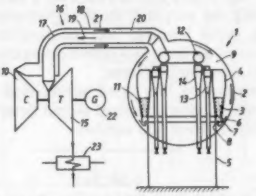
Pehr Börjesgard; Renzo Cetrelli, both of Finspong; Anders Kullendorff, Aby; Stur Schön, and Jan Wikner, both of Finspong, all of Sweden, assignors to Stal-Laval Turbin AB, Sweden

Filed Sep. 11, 1979, Ser. No. 74,462

Claims priority, application Sweden, Sep. 12, 1978, 7809557

Int. Cl.³ F02C *7/20, 3/26*

U.S. Cl. 60—39.32 **11 Claims**



1. A gas turbine plant, comprising:

a combustion chamber having an inlet and an outlet;

a gas turbine having an inlet spaced from said combustion chamber;

a compressor having an outlet for supplying compressed combustion air to said combustion chamber;

an inner conduit arranged between said outlet of said combustion chamber and said inlet of said turbine and provided with an internal thermal insulation;

a casing tube arranged inside and spaced from said inner conduit, thus forming an annular gap between said casing tube and said inner conduit; and

an outer conduit, coaxially arranged around said inner conduit between said outlet of said compressor and said inlet of said combustion chamber for conveying air through a gap defined between said inner and outer conduits.

4,281,511

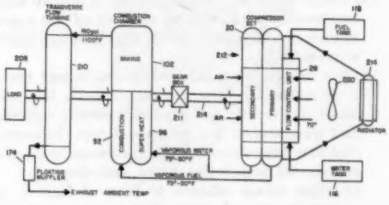
HYDRO-FLOW SUPRA-TURBINE ENGINE

Abas B. Neale, 3172 Ellington Dr., Hollywood, Calif. 90068

Filed Feb. 27, 1980, Ser. No. 124,982

Int. Cl.³ F02C *3/30*

U.S. Cl. 60—39.53 **52 Claims**



1. A high pressure, low operating temperature, high efficiency turbine engine system comprising:

dual input flow control apparatus including means for controlling an input flow of fuel, and for separately and concurrently controlling a flow of input water;

dual compressor and vaporization apparatus including a primary air compressor, and means for feeding fuel from said flow control apparatus into said primary air compressor for complete vaporization as the air is compressed; and a secondary air compressor in heat transferring juxtaposition with said first air compressor, and means for feeding water from said flow control apparatus into said secondary compressor for complete vaporization of said water vapor as the air is compressed and heat is absorbed from said primary compressor; and means for separately pro-

viding compressed air containing vaporized fuel, and compressed air containing water vapor from said dual compressor apparatus;

a three chamber combustion assembly having a combustion chamber for burning said vaporized fuel and its associated compressed air, said combustion chamber having an associated superheating chamber in heat transferring relationship with said combustion chamber, and means for supplying the compressed air and water vapor from said dual compressor to said superheating chamber to superheat the water vapor, and means including a mixing chamber for receiving the output from the combustion chamber following initial burning, and the superheated steam and compressed air from said superheating chamber, and thoroughly commingling them;

a low temperature, low speed turbine; and

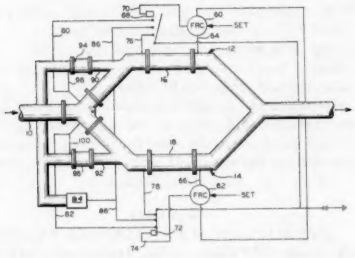
means for supplying the mixed output from said combustion assembly to drive said turbine.

4,281,512

APPARATUS FOR REDUCING NON-GASEOUS POLLUTANTS

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 30, 1979, Ser. No. 89,419
Int. Cl.³ F01H 3/02
U.S. Cl. 60—311 **8 Claims**



1. Apparatus for removing combustible, non-gaseous pollutants from gaseous combustion products containing the same, comprising:

(a) transmission line means adapted to receive said gaseous combustion products from a source of said gaseous combustion products and pass the same through said transmission line means;

(b) first branch line means and second branch line means in communication with said transmission line means and adapted to receive said gaseous combustion products from said transmission line means and pass the same through said first and second branch line means, each of said first and second branch line means, including:

(1) filter means adapted to filter at least a significant amount of said combustible, non-gaseous pollutants from said gaseous combustion products;

(2) normally-closed, combustion-supporting gas supply line means in communication with said branch line means and adapted to supply combustion supporting gas to said filter means;

(3) ignition means adjacent said filter means and adapted to ignite and burn combustible, non-gaseous pollutants collected in said filter means; and

(4) sensing means in said branch line means downstream of said filter means and adapted to sense one of the pressure or the flow rate of gaseous combustion products passing through said branch line means;

(c) valve means adapted to simultaneously close one of said first and second branch line means and prevent the passage of said gaseous combustion products therethrough and open the other of said first and second branch line means and pass said gaseous combustion products therethrough; and

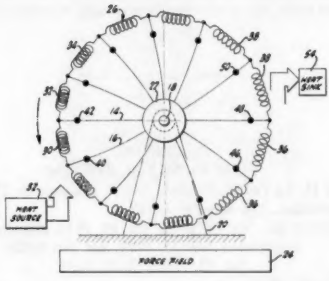
(d) control means operatively connecting said sensing means in said first and second branch line means to said combustion supporting gas supply line means in communication with said first and second branch line means, said ignition means in said first and second branch line means and said valve means and adapted to close one of said first and second branch line means, open said combustion supporting gas supply line means in communication with said closed branch line means to supply combustion supporting gas thereto, actuate said ignition means in said closed branch line means to ignite and burn combustible, non-gaseous pollutants collected in the filter means in said closed branch line means and open the other of said first and second branch line means and pass gaseous combustion products therethrough, when the pressure or flow rate, respectively, sensed by said sensing means in the one of said first and second branch line means through which gaseous combustion products reaches a predetermined value.

4,281,513

FIELD EFFECT MEMORY ALLOY HEAT ENGINE

Alfred D. Johnson, and Paul F. Kirkpatrick, both of 5383 Bancroft Ave., Oakland, Calif. 94601

Filed Apr. 6, 1979, Ser. No. 27,737
Int. Cl.³ F03G 7/06
U.S. Cl. 60—527 **12 Claims**



1. A memory alloy heat engine for converting a source of heat into mechanical work, comprising the combination of a wheel mounted for rotation about an axis, the wheel including a plurality of spokes mounted to extend radially from the axis to resiliently displace in the plane of rotation of the wheel, field effect elements carried on the distal ends of the spokes with the elements coacting with a force field located remote from the wheel axis to create a force on each of the elements, shape memory alloy means connected to the distal ends of the spokes, said alloy means deforming between a memory shape and a trained shape when heated to or cooled from, respectively, the phase change transition temperature of the alloy means, said alloy means when heated above said transition temperature causing the spokes associated therewith to displace in one directional sense about the axis and when cooled below said transition temperature causing the spokes associated therewith to displace in an opposite rotational sense about the axis, said displacement of the spokes causing an increase of concentration of the field effect elements on one side of the wheel and a decrease of concentration of the field effect elements on an opposite side of the wheel to create asymmetry in the field force acting on the elements to produce a resultant force which is applied as a net torque on the wheel about the axis.

4,281,514

APPARATUS FOR THE PRODUCTION OF ENERGY AND METHOD FOR UTILIZING THE PRESSURE AND/OR TEMPERATURE CONDITIONS IN DEEP WATERS

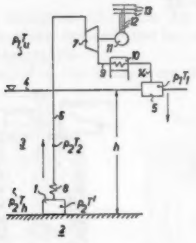
Paul K. Egerer, Schlüsselgasse 9, A 1040 Wien, Austria

Filed Dec. 28, 1978, Ser. No. 974,073

Claims priority, application Austria, Dec. 28, 1977, 9376/77; Oct. 16, 1978, 7430/78

Int. Cl.³ F03G *7/02, 7/04*

U.S. Cl. 60—641 R **19 Claims**



1. A method for the production of energy utilizing either the pressure condition or the temperature condition environment characteristics of deep water or both, particularly the sea, comprising:

positioning a first tank outside the water for use as a collection tank;

connecting a second tank to said first tank through a connecting pipe, said second tank containing a medium which varies its physical state, said physical state variation including a variation of its state of aggregation or its volume or both, variation of said physical state of said medium causes said medium to flow from said second tank into said first tank through said connecting pipe, said medium being responsive to and influenced by the pressure or temperature conditions or both of the deep water outside said tank;

lowering said second tank as a starting tank with said medium therein into said deep water in which the pressure condition or temperature condition or both are substantially different from the atmospheric conditions outside the deep water, thereby causing the medium to flow through said connecting pipe and rise therein for entry into said first tank; and

utilizing the energy of flow of the rising medium for the production of energy by applying the energy produced to an energy converter.

4,281,515

SOLAR POWERED COOLING DEVICE

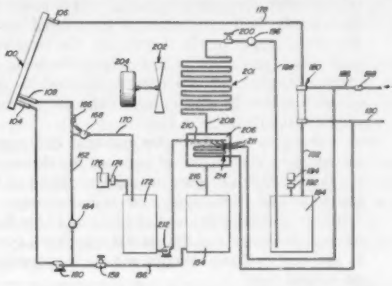
Cress R. Ferriera, Stockton, Calif., assignor to Energy Wise, Inc., Lodi, Calif.

Filed Nov. 14, 1978, Ser. No. 960,555

Int. Cl.³ F25B *27/00, 15/00*

U.S. Cl. 62—2 **10 Claims**

1. A solar cooling system comprising: an absorbent solution including a two-phase refrigerant and an absorber, said two-phase refrigerant comprising water; solar collector means for placing the absorbent solution in direction communication with solar radiation for separating refrigerant from the solution; cooling means connected to the solar collector means for utilizing the separated refrigerant to produce evaporative cooling of a working medium; and means for recombining the separated refrigerant and the remaining solution from which it was separated, said solar collector means comprising a first chamber having an inlet for allowing the entry of said absorbent solution, said first chamber having at least one perimetric section composed of a transparent panel for allowing direct communication of solar radiation with said absorbent solution in said first chamber, a second chamber having an outlet therein for allowing said remaining absorbent solution to pass therethrough from said solar collecting means, said second chamber being separated from said first chamber by a partition,



and a third chamber in communication with said first and second chambers, said third chamber being disposed vertically above said first and second chambers and including a vapor outlet connected thereto for transferring said separated refrigerant in the vapor state to said cooling means, said solar collector means being maintained at a sub-atmospheric pressure.

4,281,516

THERMOELECTRIC HEAT EXCHANGER INCLUDING A LIQUID FLOW CIRCUIT

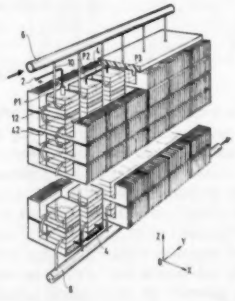
Michel Berthet, Gif-sur-Yvette; Jean-Claude Kermarrec, Vélizy-Villacoublay, and Robert Ravelet, Palaiseau, all of France, assignors to Compagnie Europeenne pour l'Equipement Menager "CEPEM", Paris, France

Filed Mar. 25, 1980, Ser. No. 133,697

Claims priority, application France, Mar. 26, 1979, 79 07518

Int. Cl.³ F25B *21/02*

U.S. Cl. 62—3 **6 Claims**



1. A thermoelectric heat exchanger assembly with a liquid flow circuit, said exchanger assembly including:

firstly at least one thermopile of electrically non-insulative units which are in good electrical and thermal contact and are superposed in a stack direction OZ, the thermopile being formed by a plurality of stages each of which includes the following four components:

a thermoelement of a first conductivity type;

a heat conductor of a first type;

a thermoelement of a second conductivity type, opposite to the first; and

a heat conductor of a second type;

said thermoelectric heat exchanger also including electric

connections at both ends of the thermopile to effect electrical current passage through said components in series;

a first fluid flow circuit for the circulation of a first heat exchange fluid;

a second fluid flow circuit for the circulation of a second heat exchange fluid, said second fluid being a liquid, said circuit being constituted by a pipe which passes in series through the heat conductors of the second type in the successive stages of the thermopile, the lengths of said pipe which pass through said conductors being heat exchange lengths and being interconnected in series by connection lengths which extend between two successive stages of the thermopile; and

heat exchangers of a first type and heat exchangers of a second type to change heat between the thermopile and the fluids which circulate in said first circuit and in said second circuit respectively, the heat exchangers of the first type including the heat conductors of the first type, the heat exchangers of the second type being constituted by said heat exchange lengths and the heat conductors of the second type,

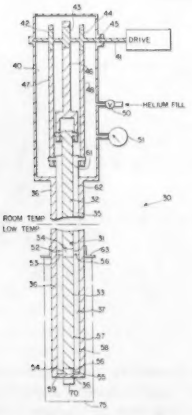
each heat exchange length being curved at each stage of the thermopile so that it enters the heat conductor and leaves it through the same face of a thermopile, and wherein the direction YO in which each heat exchange length leaves the thermopile being substantially opposite to the direction OY in which the heat exchange length enters the thermopile, thereby facilitating assembly of the thermopile.

4,281,517

SINGLE STAGE TWIN PISTON CRYOGENIC REFRIGERATOR

James E. Zimmerman, and Donald B. Sullivan, both of Boulder, Colo., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 27, 1980, Ser. No. 125,005
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 **25 Claims**



1. A regenerative cycle refrigerator with a working fluid comprising:

a cylinder;

means compressing the working fluid in the cylinder;

means expanding the working fluid in the cylinder;

means driving the compressing means and expanding means; and

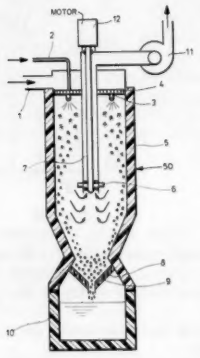
means forming a plurality of regenerative heat exchange paths between the compressing means and the expanding means.

4,281,518

METHOD AND APPARATUS FOR SEPARATING PARTICULAR COMPONENTS OF A GAS MIXTURE

Martin Müller; Albert Seidel, both of Siegertsbrunn; Gunther Schmidt, Taufkirchen; Holm Schubert-Klempnauer, Kolbermoor; Werner Malburg, Neubiberg, and Rolf A. Brand, Ottobrunn, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Jan. 21, 1980, Ser. No. 113,743
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902391; Apr. 20, 1979, 2915953
Int. Cl.³ F25J 1/02
U.S. Cl. 62—12 **11 Claims**



1. A method of separating a component chosen from the group consisting of sulfur dioxide, ethylene oxide and hydrocarbons which are gaseous or liquid at normal temperature, from a gas mixture of the component plus air comprising:

directing the gas mixture at such normal temperatures downwardly into a separator tank;

supplying finely atomized liquid nitrogen into the tank to mix with the gas mixture and form flakes of the component due to a sudden drop in temperature of the gas mixture, to form a stream in the separator tank;

rotating the stream to accelerate the flakes outwardly toward walls of the separator tank and separate the flakes from the air in the tank;

removing the air from the tank;

melting the flakes after they are separated from the air to form liquid component; and

removing the liquid component from the separator tank.

4,281,519

REFRIGERATION CIRCUIT HEAT RECLAIM METHOD AND APPARATUS

Herbert J. Spath, Clay, and Glendon A. Raymond, Fulton, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 25, 1979, Ser. No. 88,322
Int. Cl.³ F25B 7/00, 27/02
U.S. Cl. 62—79 **11 Claims**

7. A refrigeration system which comprises:

a refrigeration circuit having an evaporator, condenser, expansion device and a compressor;

a heat exchanger connected to receive refrigerant from the compressor of the refrigeration circuit and to discharge refrigerant to the condenser of the refrigeration circuit;

a tank containing a reservoir of water;

means for circulating a selected volume flow per unit time of water in the tank through a flow path having the primary flow in heat exchange relation with the refrigerant in the heat exchanger and a lesser secondary flow bypassing the heat exchanger under a first set of water temperature

conditions when the compressor of the refrigeration circuit is operating, and

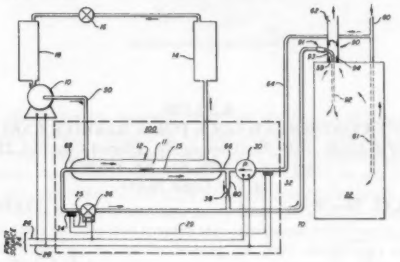
means for circulating a substantially reduced volume flow per unit of time of water in the tank through the flow path bypassing the heat exchanger when the compressor of the refrigeration circuit is operating and when there exists a second set of water temperature conditions.

10. A method of transferring heat energy from a refrigeration circuit used to heat or cool a space upon demand to a hot water system which comprises the steps of:

energizing the refrigeration circuit on demand to circulate the refrigerant flowing within the circuit through a heat exchanger;

energizing a pump simultaneously with the refrigeration circuit to circulate water between the hot water system and the heat exchanger;

sensing the temperature of the water from the hot water system;



sensing the temperature of the water being discharged from the heat exchanger;

routing water primarily through the heat exchanger when the water from the hot water system is below a first predetermined temperature and the water being discharged from the heat exchanger is above a second predetermined temperature, and

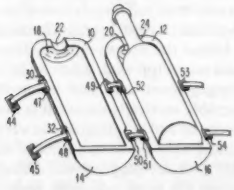
by-passing a restricted flow of water around the heat exchanger when either the temperature of the incoming water is above the first predetermined temperature or the temperature of the water being discharged from the heat exchanger is below the second predetermined temperature, said step of by-passing serving to allow continuous but reduced flow circulation of water between the tank and the heat exchanger to allow the water temperature of the tank to be continuously monitored.

4,281,520

PORTABLE COOLER FOR BOTTLED BEVERAGES

Donald D. Norwood, 1261 Crescent Ter., Sunnyvale, Calif. 94087

Filed Jan. 15, 1980, Ser. No. 112,360
Int. Cl.³ F25D *3/08, 11/00*
U.S. Cl. 62—372 **6 Claims**



1. A bottle cooling device comprising:

a pair of hollow modules, each module being hollow and including refrigerant material therein, each module having an outer arcuate surface forming an outer wall describing the arc of a semicircle, and an inner arcuate surface for engagement with a bottle to be cooled, said inner arcuate surface describing less than the arc of a semicircle and having a curvature which fits the curvature of the largest diameter bottle to be accommodated, such that said modules substantially surround the surface of said bottle to be cooled,

each of said modules further having a projecting bottle support portion at the lower end thereof to support the bottom of a bottle, each module further including first and second restraining means on the outer surface thereof adapted to receive a strap; and,

a strap having a first adjustable loop at one end thereof and a second adjustable loop at the other end thereof, said first loop being wrapped around said modules in engagement with said restraining means and said second loop wrapped around said modules in engagement with second restraining means,

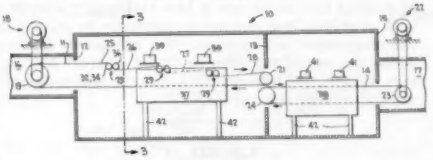
thereby securing said pair of modules around said bottle and providing a carrying strap between said first and second loops.

4,281,521

FLUIDIZED FREEZING

Walter H. Martin; George C. Briley, and Peter Y. Pao, all of San Antonio, Tex., assignors to Refrigeration Engineering Corporation, San Antonio, Tex.

Filed Dec. 5, 1979, Ser. No. 100,527
Int. Cl.³ F25D *25/04*
U.S. Cl. 62—380 **9 Claims**

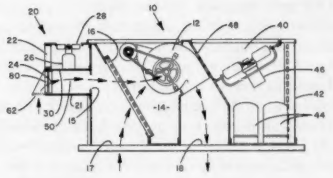


1. In a I.Q.F. apparatus for processing articles of food, including a deep bed gas-fluidization freezing means for deep freezing the articles disposed in a deep-bed fluidized condition created by air at subfreezing temperature blown upwardly therethrough, a freezer conveyor for conveying the articles from a receiving to a discharge location during the deep freezing thereof, a separate article conditioning conveyor for delivering the articles from a loading station onto said freezer conveyor at said receiving station, and means for chilling the articles to near freezing temperature by blowing air at subfreezing temperature upwardly through the articles on said conditioning conveyor with said articles being in a fluidized condition, the improvement wherein said conditioning conveyor comprises an endless, foraminous conveyor belt having a horizontal lower run, means engaging the upper run of said belt providing at least two sections of said upper run with a stepped formation between said sections, an end of one of said sections lying at a higher elevation than an adjacent end of the other of said sections, said stepped formation effecting a thinning in the bed of articles passing therethrough whereby to rapidly increase the air velocity through the articles on said conditioning conveyor so as to cool and separate the articles preventing them from sticking and freezing to one another before being subjected to deep bed gas-fluidization.

4,281,522
MAKEUP AIR PRECONDITIONER FOR USE WITH AN AIR CONDITIONING UNIT

Rudy C. Bussjager, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 30, 1979, Ser. No. 89,658
Int. Cl.³ F25D *17/04*
U.S. Cl. 62—409 **12 Claims**

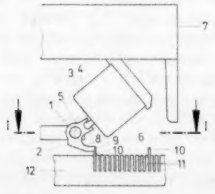


1. An air conditioning system which comprises:
an enclosure defining an indoor air section;
a first refrigeration circuit including an indoor heat exchanger mounted within the indoor air section in heat exchange relation with air flowing therethrough and a second heat exchanger located remotely from the indoor heat exchanger to transfer heat energy between the indoor heat exchanger and the second heat exchanger;
an indoor fan for circulating air in heat exchange relationship with the indoor heat exchanger and for circulating air to a space to be conditioned;
a return air flow path for supplying return air from the space to the indoor section;
a makeup air flow path for allowing ambient air to enter the indoor section;
damper means for regulating the volume of air flowing along the makeup air flow path; and
a second vapor compression refrigeration circuit including a makeup air heat exchanger located in heat exchange relation with the air flowing along the makeup air flow path, an outdoor heat exchanger in heat exchange relationship with an ambient heat sink and a compressor for increasing the temperature and pressure of a refrigerant flowing within the second refrigeration circuit whereby heat energy is transferred between the makeup air heat exchanger and the outdoor heat exchanger.

4,281,523
ELECTRICALLY CONTROLLED SELECTING DEVICE FOR THE NEEDLES OF A FLAT KNITTING MACHINE

Reinhold Schimko, Aalen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,732
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844135
Int. Cl.³ D04B *15/00*
U.S. Cl. 66—232 **1 Claim**

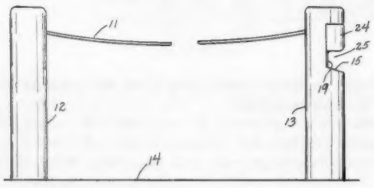


1. An electrically controlled selection device for the needles of a flat knitting machine having a needle bed with a plurality of grooves and a carriage, a plurality of selection jacks for controlling the needles being mounted in said needle grooves so as to be movable in the same direction as the needles, said selection jacks including staggered feet arranged to form foot rows in the longitudinal direction of the needle bed, a plurality of advancing cam elements, one for each foot row, being mounted on said carriage for advancing said selection jacks in the direction of said needles and being shiftable into and out of engagement with said feet between adjacent feet of a foot row by means of a control magnet, each cam element comprising a two arm lever pivotally mounted on an axle attached to said carriage and extending parallel to said needle grooves, one arm of said two arm lever being provided with inclined advancing surfaces for engagement with said feet to advance said selection jacks toward said needles and the other lever arm having a fork and a control magnet associated with each cam element having a pivoted armature disposed in engagement with said fork.

4,281,524
KEY-CONTROLLED LOCK FOR A BARRIER CABLE

Peter J. Linder, 3109 Ramblewood Rd., Ellicott City, Md. 21043

Filed Feb. 5, 1980, Ser. No. 118,963
Int. Cl.³ E05B *73/00*
U.S. Cl. 70—18 **15 Claims**



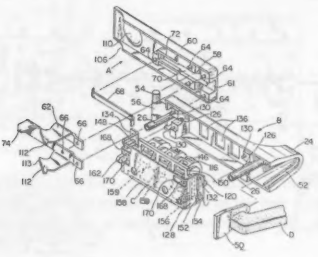
1. In combination with a roadway, means defining a security barrier across said roadway, said barrier means comprising a first upstanding support at one side of the roadway, a second upstanding support at the opposite side of the roadway, a barrier cable extending across the roadway at barrier height, means permanently securing one end of said cable to the first upstanding support, said second upstanding support being formed at the side thereof remote from the first support to define a notch having a generally horizontal bottom wall and a generally vertical inner wall, a main lock body secured to said generally vertical inner wall and being located above said generally horizontal bottom wall to define an access space, said lock body being formed with a locking recess facing said inner wall, said second support being formed with a cable-receiving bore communicating with said locking recess, said other end of the cable having an enlarged end ferrule slidably fitting through said cable-receiving bore and being movable into said locking recess, the top wall of said recess being upwardly offset relative to said bore sufficiently to define an inside locking shoulder, a vertical clamping screw threadedly engaged in said lock body below the recess in a position to clamp the ferrule against said recess top wall, whereby to hold the ferrule in locking interengagement with said inside shoulder, and a cylinder lock assembly vertically mounted in the bottom of the lock body subjacent to and substantially in vertical alignment with said screw, said cylinder lock assembly including a central key-releasable cylinder plug normally blocking access to said clamping screw but being releasable responsive to actuation by a proper key to allow the plug to move downwardly into said access space to afford operating access from below to said clamping screw.

4,281,525

HARDWARE FOR LUGGAGE AND THE LIKE

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock Company, Division of Walter Kidde & Co., Inc., Garfield, N.J.

Filed Oct. 10, 1978, Ser. No. 949,992
Int. Cl.³ E05B *65/52*
U.S. Cl. 70—71 **22 Claims**



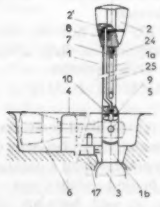
1. Hardware for luggage cases and the like, comprising a valance member adapted to be attached to one part of a luggage case along an edge thereof, a latch, means supporting the latch on the valance member for pivotal movement about an axis perpendicular to the edge near one end of the latch, the latch being pivotally movable away from the valance member to an open position and toward the valance member to a closed position, spring means for biasing the latch toward its open position, control means supported for movement along the valance member, the control means and the latch having cooperating catch elements that are engageable to hold the latch in its closed position, spring means for biasing the control means in a first direction to engage the catch elements, and manual actuator means near the opposite end of the latch and coupled to the control means for moving the control means in a second direction to disengage the catch elements and release the latch for movement to its open position, the latch having a latch element thereon adapted to engage a cooperable latch element on a second part of the case that moves toward the valance member when the parts of the case are brought together.

4,281,526

ANTI-THEFT DEVICES FOR MOTOR VEHICLES

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed May 21, 1979, Ser. No. 41,219
Claims priority, application France, Jun. 8, 1978, 78 17254
Int. Cl.³ B60K *20/04*; B60R *25/06*
U.S. Cl. 70—202 **3 Claims**



1. In a vehicle having a housing disposed therein in substantially horizontal disposition, an engine, and an electric system therefor including an ignition circuit, the provision of a lever assembly comprising

(a) a lever, essential to the operation of the vehicle, having a first portion for connection to the vehicle mechanism to be operated, extending through an aperture in the housing and a second portion pivotally mounted on the first portion about an axis disposed above the housing, said second portion of the lever being manually movable between an operative position at which the lever extends substantially vertically of said housing and a stowed position at which the lever extends along and substantially parallel to said housing,

(b) a catch member located at a position on said housing spaced from said first lever portions for effecting retention of the lever when the latter is in its stowed position,

(c) a key-operated cylinder lock for actuating said catch member to effect release of said lever,

(d) a locking rod movably disposed within said lever for locking said first and second lever portions together when in use,

(e) spring means for urging said rod into a locking position,

(f) a rotatable handle provided at the distal end of the second lever portion,

(g) a push rod operable on rotation of said handle to effect release of said locking rod,

(h) first electrical contact means mounted at said distal end of the second lever portion, and

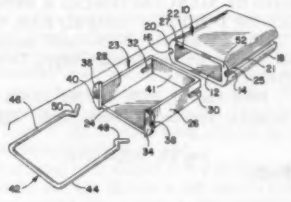
(i) second electrical contact means provided on said rotatable handle cooperable with said first contact means on rotation of said handle, said first and second contact means serving to control the electrical system wherein the rotatable handle in one region of rotation causes release of the locking rod and in another region of rotation causes engine starting.

4,281,527

KEY HOLDER

Norbert Leopoldi, 3601 W. Devon Ave., Chicago, Ill. 60659, and William P. Heinrich, 2709 W. Sterling Dr., McHenry, Ill. 60050

Continuation-in-part of Ser. No. 60,495, Jul. 25, 1979, abandoned. This application Nov. 30, 1979, Ser. No. 99,077
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—456 R **3 Claims**



1. An apparatus for holding keys comprising a housing, open at one end, a resilient, generally U-shaped bail, slidably disposed on said housing, wherein said housing is adapted to receive and retain the bits of a plurality of keys and a means for aligning said keys for insertion in the said housing comprising a tray, slidably disposed within said housing, mounted for movement in unison with said bail.

4,281,528

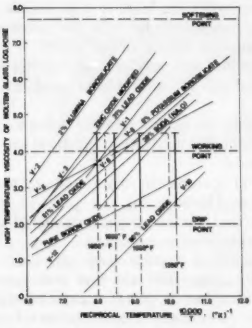
PROCESS FOR ISOTHERMALLY SHAPING A TITANIUM-CONTAINING METAL WORKPIECE

William D. Spiegelberg, Parma; Donald J. Moracz, Garfield Heights, and Frank N. Lake, Mentor, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Jul. 27, 1978, Ser. No. 928,395
Int. Cl.³ B21B *45/00*
U.S. Cl. 72—46 **11 Claims**

1. A process for isothermally shaping a titanium-containing metal workpiece in a hot die including the steps of providing a precoat separation lubrication composition which is a liquid dispersion of a vitreous component and a finely divided solid

lubricant selected from graphite, boron nitride and mixtures of graphite and boron nitride in a solution of an organic solvent and a resin binder soluble in said solvent and wherein the particle size of the vitreous component and the solid lubricant is less than about 200 mesh, U.S. Standard sieve size, and the weight ratio of solid lubricant to vitreous component is at least 1:1, said vitreous component having a melting point above 800° F. and below the temperature of isothermal shaping, coating



said workpiece with said precoat composition, heating said workpiece to attain a temperature between 1000° F. and 1400° F. for from 1 to 30 minutes to volatilize the organic solvent and thermally decompose the resin binder to leave a residue of vitreous material and solid lubricant on said workpiece, transferring the workpiece in a preheated die system, attaining a temperature of from 1350° F. to 1750° F. and loading said die to alter the shape of said workpiece.

4,281,529

METHOD OF MANUFACTURING A RESILIENT, SINGLE OR DOUBLE C-SHAPED RAIL CLAMP

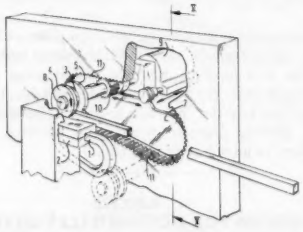
Marius H. Lubbers, Wassenaar, Netherlands, assignor to Everts & van der Weyden Exploitatiemaatschappij Ewem N.V., The Hague, Netherlands

Filed May 21, 1979, Ser. No. 40,870

Claims priority, application Netherlands, Jul. 19, 1978, 7807737

Int. Cl.³ B21D *7/00*

U.S. Cl. 72—215 **7 Claims**



1. The method of making a resilient, C-shaped rail clamp, which comprises the steps of:

(a) fixing one end of an elongate bar to leave the remainder of the bar exposed; and

(b) deforming said bar into C-shape by engaging one side of the bar with a roller while leaving the opposite side wholly free and travelling the roller through a closed path which begins and ends adjacent said fixed end of the bar.

4,281,530

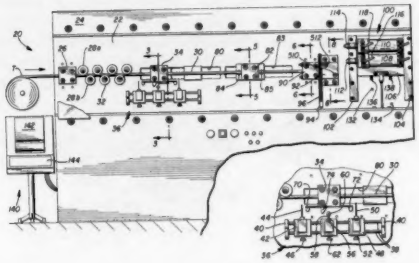
APPARATUS FOR CUTTING AND FORMING TUBING

William G. McElhaney, Jacksonville, Tex., assignor to Anvil Corporation, Jacksonville, Tex.

Filed May 29, 1979, Ser. No. 42,897

Int. Cl.³ B21D *43/28*

U.S. Cl. 72—294 **21 Claims**



1. An apparatus for forming tube components from a length of tube comprising:

a transport clamp mounted for controlled movement in a first and a second direction along a predetermined path,

actuation means for clamping the tube within said transport clamp when said transport clamp is moving in the first direction for drawing the tube along the predetermined path,

adjustable switch means cooperating with said transport clamp for controlling the movement of said transport clamp in the first and second directions,

forming clamp means on said predetermined path for selectively clamping said tube when said transport clamp is moving in the second direction,

cutoff means positioned along said predetermined path for cutting the tube into severed tube pieces,

control means for operating said cutoff means in relation to the movement of said transport clamp,

tube forming means selectively positionable within the predetermined path for forming the end of the tube, and

intermediate switch means adjustable relative to said adjustable switch means for controlling said tube forming means in relation to the movement of said transport clamp.

4,281,531

BLIND RIVETER WITH PNEUMATIC RIVET-CORE DISPOSAL

Hans Ehmann, Frankfurt am Main; Walter Bieber, Dreieich, and Hans Baier, Gross-Gerau, all of Fed. Rep. of Germany, assignors to Gesipa Blindniettechnik GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 50,960

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827904; Jun. 24, 1978, 7819059

Int. Cl.³ B21J *15/34*

U.S. Cl. 72—391 **14 Claims**

1. A blind riveter for setting blind rivets having rivet bodies each having a pull-out mandrel, said riveter comprising:

a housing having a tip and forming a passage opening at one end at said tip and having another end;

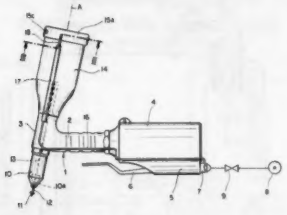
a chuck displaceable in said housing adjacent said tip, whereby a rivet mandrel can be engaged in said chuck with the respective rivet body bearing against said tip so that displacement of said chuck pulls the mandrel through the rivet body to upset same;

a source of compressed gas;

pneumatically operable drive means connected between said source and said chuck to displace same in said housing;

a substantially closed compartment on said housing at the other end of said passage; and

means including a pump having a high-pressure input connected to said source and a low-pressure intake connected to said compartment for aspirating air from said compartment and thereby for forming an air current through said passage to such a mandrel pulled from the respective rivet body into said compartment.

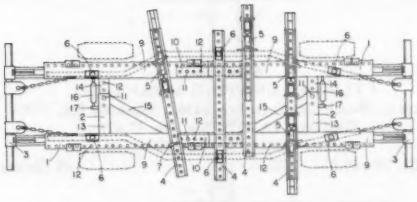


4,281,532

PORTABLE APPARATUS FOR STRAIGHTENING AUTOMOBILE BODIES

Fred D. Covington, Albuquerque, N. Mex., assignor to Portaframe, Inc., Albuquerque, N. Mex.

Filed Mar. 19, 1980, Ser. No. 131,623
Int. Cl.[3] **B21J** *13/08*
U.S. Cl. 72—457 **2 Claims**



1. A portable and moveable apparatus for straightening automobile bodies comprising:

two longitudinal main beams telescopically connected to each other with two transverse beams,

two end bars,

a plurality of cross beams; and

a plurality of load pad units: and

a plurality of support jacks; and

a plurality of tie downs; and

a plurality of pins, and four removeable wheel units; and

a plurality of clamps;

wherein each main beam comprise of two half beams being box beams with two parallel flanges extending from adjacent corners of the main beam and said flanges running the length of the main beams, said flanges each having a plurality of pin holes along its length, said pin holes being aligned with the corresponding pin hole in the other flange so that one of the plurality of pins may pass through a hole in each flange when installed, and wherein said half beams are telescopically connected by a connecting box beam sized to slideably mate inside each half beam; and

wherein each of the transverse beams comprises a large transverse half beam and a smaller transverse half beam;

wherein the two large transverse half beam are rigidly affixed, each to a half beam of one main beam, and the two smaller transverse half beams are rigidly affixed to the half beams of the other main beam so that the smaller transverse half beams telescopically and slideably mate with the larger transverse half beam, and are pinned with pins through pin holes in the mated larger and smaller transverse half beams; and

wherein corner plates are rigidly affixed between the larger transverse half beams and the corresponding half beams of the main beam; and

wherein there is provided a means for adjusting the distance between the main beams during assembly of the apparatus; and

wherein each of the removeable wheel units comprises of a support beam, a hydraulic jack, a lever arm, a castor yoke, castor axle, and castor; each said support beam being a box beam sized to slideably insert into an end of a main beam and said support beam being rigidly pinned to the end of the main beam by pins inserted through pin holes provided in the main beam and the support beam; said support beam having pivot holes and pivot pins pass through the pivot holes through a rotary end of the hydraulic jack thereby pivotally attaching a hydraulic jack inside the support beam; the hydraulic jack has a piston rod which is pivotally attached to the lever arm by pivot pins passing through pivot holes provided in the lever arm; said lever arm also having a castor end to which the castor yoke is rotatably affixed; said castor yoke supporting the castor axle and castor attached thereto; and

wherein the end bars, each comprise two channels a tie bar two slide clamps and two slideable chain clasps; each channel having a horizontal beam having a plurality of pin holes so that the horizontal beam may be rigidly pinned to the main beam, and said channel having a vertical post, T shaped in crossedsection, and a web rigidly affixed between the vertical post and the horizontal beam; and each of the slide clamps being generally spring, wedge shaped, having T shaped slots enabling the spring clamps to slide vertically, when compressed, on the vertical posts; and the tie bar slideably inserts into one slide clamp on each vertical post which is mated by its respective horizontal beam to adjacent ends of the two main beams; slideably installed on the tie bar are two chain clasps which are metal bands which have a tongue through which a key hole slot is provided in order to secure chains from a vehicle; and

wherein the cross beams are channel beams of sufficient length to extend substantially beyond the main beams, when the cross beams are placed upon and perpendicular to the assembled main beams, and the cross beams have a plurality of pin holes along the bottom of the channel and a long the vertical faces of the channel, the pin holes in the vertical faces of the channel being aligned so that a pin may pass through both faces; and

the tie downs being an L shaped bolt which inserts through the pin holes and has thereon a nut on one end securing the bolt to a main beam, and the L shaped end hooking on to the cross beam when the cross beam is attached to the main beams at other than right angles, when the pin holes in the cross beam do not align with the pin holes in the main beam; and

each of the plurality of load pad units comprising a load pad, jack ram and hydraulic jack, wherein the hydraulic jack is equipped with a jack base and a jack collar which slideably insert into the cross beam; and

wherein a pin through pin holes, in the vertical faces of the channel provides the base support for the hydraulic jack; and the jack ram is a beam having two channel irons back to back rigidly affixed to two spacer blocks between and at the ends of the channel irons and having a pivot block rigidly affixed between the channel irons near one end of the jack ram, the pivot block being generally rectangular in shape with the side adjacent to the end of the jack ram having a step and the upper corner adjacent to the end of the jack ram being rounded; and the load pad being a vertical member having a top, a bottom, a working face, force pad, and back wherein the bottom is curved eliminating the corner between the bottom and the back, and the back having a vertical flat to engage the spacer block

of the jack ram, the working face having a step to engage the step on the pivot block of the jack ram, and the top being cylindrical in shape, and the force pad being a generally flat face member having a cylindrical hollow mounting on its back so that the force pad slideably and rotatably mates on to the top of the load pad; and

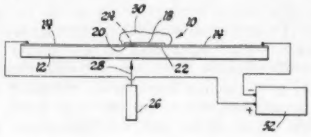
the support jacks which are hydraulic jacks that may be installed in side cross beams, or set on top of the main beams thereby holding up the vehicle, and the clamps are members having a C shaped base which slides over the upper flange of the main beams and having a vertical lug on the top of the C shaped base, said vertical lug having a key hole slot through which a chain may be secured and the clamps each having a plurality of pin holes, aligned so that a pin may pass through both faces of the C shaped base and through pin holes in the flanges of the main beams.

4,281,533

APPARATUS FOR MEASURING SOOT CONCENTRATION IN ENGINE OIL

Gary L. Eesley, Lake Orion; Gregory B. DeMaggio, St. Clair Shores, and Jeffrey C. Buchholz, Detroit, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 14, 1980, Ser. No. 112,131
Int. Cl.³ G01N *25/00, 33/28*
U.S. Cl. 73—15 R **3 Claims**



1. Means for measuring soot concentration in engine oil comprising

a thin film thermocouple formed on one side of a transparent substrate and having first and second spaced junctions, the side of the substrate bearing the thermocouple being immersed in oil,

means for heating the oil adjacent the first junction by an amount dependent on the soot concentration, the heating means including a source of radiation to which the substrate as well as clean oil is substantially transparent and which is absorbed by soot, and means for passing the radiation therefrom through the substrate into the oil adjacent the first junction whereby the first junction is heated when soot is present in the oil,

and means for measuring the thermocouple net voltage which is a measure of the soot concentration in the oil.

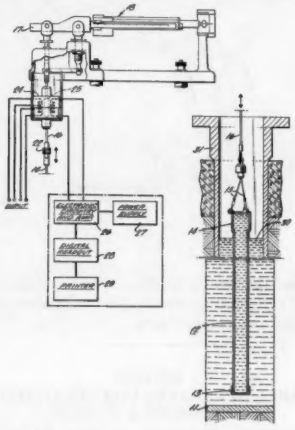
4,281,534

SENSOR FOR MEASURING LEAKAGE

William B. Hansel, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Oct. 12, 1979, Ser. No. 84,242
Int. Cl.³ G01M *3/32;* **G01F** *23/20*
U.S. Cl. 73—49.2 **2 Claims**

1. A sensor device useful for measuring mass displacement in a leaking tank comprising a main body portion having suspension means for attachment to a balance arm or other means for mass displacement detection and a liquid holding portion in said sensor body to hold liquid above the level of liquid in said tank, the cross-sectional area of said liquid holding portion being essentially equal to the cross-sectional area of the body portion in contact with the liquid in the tank, whereby changes



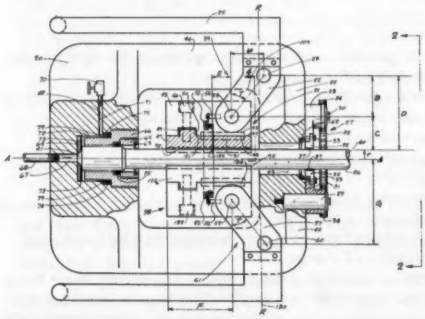
in said mass displacement measurement due to evaporative losses are compensated.

4,281,535

CYLINDER GRIPPING APPARATUS

William E. Wesch, Jr., P.O. Box 94162, Houston, Tex. 77018

Filed Jun. 11, 1979, Ser. No. 47,471
Int. Cl.³ G01M *3/28;* **B23B** *31/16*
U.S. Cl. 73—49.8 **45 Claims**



11. A hydrostatic testing apparatus for capping an open end of a pipe comprising:

a jaw, said jaw having a first bearing groove, said jaw having a friction surface adapted for gripping the pipe;

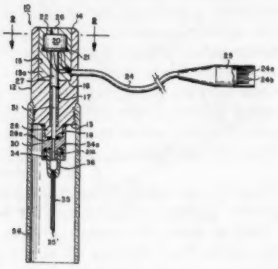
a body, said body being adapted to axially receive a pipe, said body having a second bearing groove; and,

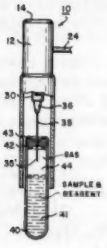
a force translation lug, said lug being unconnected to said body and said jaw, said lug being disposable against said body and against said jaw, said lug being adapted to rotatively engage within said first and second bearing grooves, said lug being operable to urge said friction surface of said jaw against an outside surface of the pipe when said lug is rotated in a first sense with respect to said body.

4,281,536
APPARATUS FOR TESTING THE CONTAMINATION OF INDUSTRIAL LIQUIDS

Thomas L. Kraft; Howard A. Vick, and James W. Meador, all of Houston, Tex., assignors to KVM Engineering, Inc., Houston, Tex.

Filed Sep. 12, 1979, Ser. No. 74,595
Int. Cl.[3] G01N 7/14
U.S. Cl. 73—53 3 Claims





1. A pressure measuring apparatus adapted to periodically measure the pressure in the headspace of a container which is partially filled with a liquid medium containing organisms, the pressure in said headspace depending on the density of said organisms, and said container having an inlet through which said liquid medium is filled into or removed from said container, said apparatus comprising in combination:

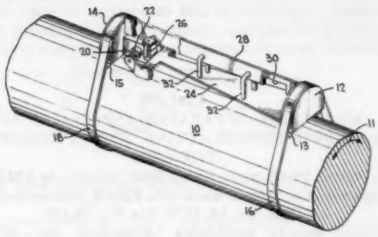
an elastic, compressible stopper for sealing said headspace in said container after said container is filled with said liquid medium to allow said organisms to generate oxygen which increases the gas pressure in said headspace;

a pressure probe, including a housing having a chamber and a bore defining a passageway, a pressure transducer mounted in said chamber, a hollow piercing element removably coupled to said housing, the interior of said element being in fluid communication with said transducer in said chamber through said passageway, said element having a pointed end portion adapted to pierce through said stopper into said headspace when said housing is pressed against said container, thereby communicating the gas pressure in said headspace to said transducer through the hollow interior of said element and said passageway, the elastic, compressible material of said stopper sealing off said headspace from the ambient before and while said element pierces said stopper, and after said element is withdrawn from said stopper.

4,281,537
STRAIN METER

John E. Burbank, III, Ridgefield, Conn., assignor to McNab, Incorporated, Mt. Vernon, N.Y.

Filed Aug. 7, 1979, Ser. No. 64,566
Int. Cl.[3] G01L 3/10
U.S. Cl. 73—862.33 5 Claims



1. A system for measuring strain in a rotating shaft comprising:

(a) first and second space blocks clamped onto said shaft and rotatable therewith;

(b) a linear variable differential transformer (LVDT) rigidly affixed to said first block;

(c) a displacement arm rigidly affixed to said second block and extending toward said LVDT and substantially parallel to the axis of rotation of said shaft;

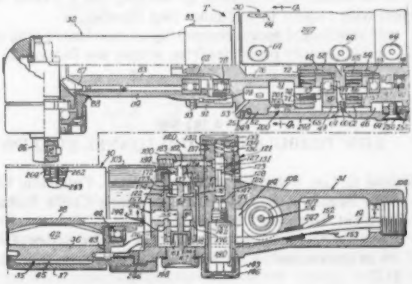
(d) a LVDT core mounted on said displacement arm and disposed to be movable through the center of said LVDT without contacting said LVDT, whereby strain occurring in said shaft between said blocks caused displacement of said LVDT core relative to said LVDT;

(e) and further comprising a flexible cable connected between said displacement arm and said LVDT, whereby said flexible cable maintains the radial position of said LVDT core relative to the axis of rotation of said shaft.

4,281,538
TRANSDUCER FOR INDICATING TORQUE

Edmund C. Dudek, St. Charles, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Division of Ser. No. 359,640, May 14, 1973, Pat. No. 3,920,082.
This application Oct. 6, 1975, Ser. No. 620,020
Int. Cl.[3] B25B 23/145
U.S. Cl. 73—862.21 17 Claims



1. A transducer construction adapted for use with a power tool or the like having a motor, a torque output member, drive means connecting said motor with said torque output member, said transducer construction comprising an annular member adapted to encircle at least a portion of and be connected to said drive means so as to be subjected to at least a portion of the torque being transmitted thereby, torsional strain responsive

means carried by said annular member and operable to provide a signal proportional to the torsional strain in said annular member and consequently to the torque output at said torque output member, said annular member including a torsionally resilient portion, said torsionally resilient portion including at least one thin-walled section of said annular member, the radially inner periphery of said thin-walled section being cylindrical, including eight symmetrically arranged flat surface portions on the outer periphery of said torsionally resilient portion providing a plurality of said thin-walled sections, and said torsional strain responsive means including a plurality of strain responsive elements mounted on said flat surface portions.

4,281,539

MEASURING APPARATUS, ESPECIALLY FOR MEASURING FORCES ACTING UPON A BEARING OR THE LIKE

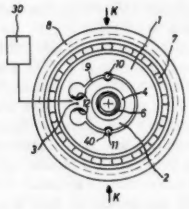
Rolf Keller, Pfaffhausen, Switzerland, assignor to SRO-Kugellagerwerke J. Schmid-Roost AG, Zürich, Switzerland

Filed Sep. 10, 1979, Ser. No. 74,114

Claims priority, application Switzerland, Sep. 20, 1978, 9839/78

Int. Cl.³ G01L *5/10, 1/22*

U.S. Cl. 73—862.54 **6 Claims**



1. An apparatus for measuring the forces, particularly the radial forces acting upon a bearing, especially a roller bearing, comprising:

two concentric ring members interconnected by web means;

said web means constituting an elastically deformable element which deforms in the presence of a force which is to be measured and is capable of influencing an electric signal transmitter;

the inner one of said ring members being equipped with attachment means, for the fixation thereof, and the outer one of said ring members being structured for receiving the bearing so that said outer ring member, in the presence of the force which is to be measured, is capable of carrying out a pivotal movement with respect to said inner ring member,

said attachment means comprising an attachment plug means which axially protrudes from at least one face of the inner ring member.

4,281,540

LOW TURBULENCE WIND TUNNEL STILLING CHAMBER

Roland E. Lee, Beltsville; Alfred G. Berger, Colesville, both of Md.; Dennis A. Sowers, Hermosa Beach, Calif.; Richard J. Sergeant, Torrance, Calif., and Hermann W. Behrens, Rancho Palos Verdes, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1977, Ser. No. 844,689

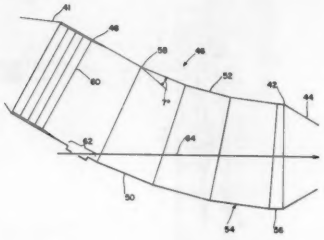
Int. Cl.³ G01M *9/00*

U.S. Cl. 73—147 **10 Claims**

1. A wind tunnel for high energy laser applications comprising:

a test chamber for containing a model support, said model support being capable of fixing a test model to be subjected to illumination with a high energy laser beam, said test chamber being in fluid communication on its downstream side with fluid exhaust means and with a primary flow nozzle on its upstream side, said nozzle being in fluid communication on its upstream side with a means for providing a controllable source of fluid at elevated pressures to be supplied to said test chamber, wherein the improvement comprises:

an improved curved elongated settling chamber interposed between said nozzle and said source of fluid at elevated pressure, said settling chamber having a gradual turning



radius to permit the fluid flow through the tunnel to follow the turning of the settling chamber and prevent turbulence;

a transverse aerodynamic window providing for the entrance of said laser beam, said window being located in the low velocity flow turning region of said settling chamber; and

a turbulent sonic free-jet coincident with said window wherein fluid flow through said settling chamber is uniform and smooth allowing said laser beam to impinge on said test model without beam distortion or degradation.

4,281,541

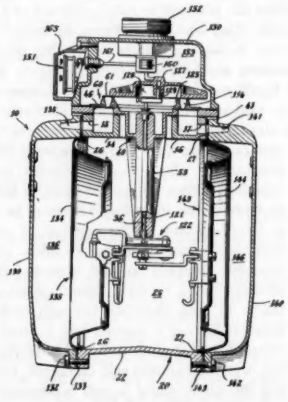
GAS METER WITH COMPOSITE IRON CENTER CASTING

Stanley S. Strengowski, Monroe, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Sep. 19, 1979, Ser. No. 76,996

Int. Cl.³ G01F *3/20*

U.S. Cl. 73—264 **10 Claims**



1. An improvement in positive displacement gas meters of the type comprising a center casting, front and rear diaphragms and front and rear covers together defining a front, a center and a rear chamber of variable volumes with the center

casting defining passages to the chambers and an outlet passage, a top casting mounted over the center casting and accepting inlet gas, a valve seat mounted to the center casting within the top casting and further defining the passages to the chambers and outlet, a valve cover slidingly positioned on the valve seat for sequentially opening the passages to inlet gas and selectively connecting the passages to the outlet, a central shaft rotated by a linkage assembly connected to the diaphragms and revolving the valve cover, and a meter readout assembly, the improvement comprising providing the center casting as a two-piece composite center casting including:

(A) a center chamber casting having a cylindrical wall portion partially defining the center chamber of the gas meter, the cylindrical wall portion having outwardly facing annular surfaces receiving the peripheral edges of the front and rear diaphragms and the front and rear covers, and an upper manifold portion having a top surface and defining a passage from the top surface to the front chamber and also defining a passage from the top surface to the rear chamber; and

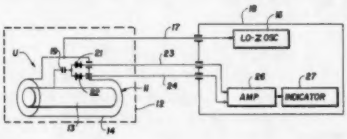
(B) a manifold casting including a plate mounted to the top surface of the center chamber casting and having the top casting mounted thereto, the plate defining an opening registering with the passages to the front and rear chambers and further defining an opening providing a passage to the center chamber, the manifold casting also at least partially defining an outlet passage to an outlet end from a collection end thereof positioned adjacent the openings to the chambers, the valve seat being mounted to the top of the plate of the manifold casting, the manifold casting further including a depending integral support bracket for the center shaft.

4,281,542

SHIELDING SYSTEM FOR CAPACITANCE TYPE FUEL QUANTITY GAUGE

Irwin Wallman, Shelburne, Vt., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Dec. 27, 1979, Ser. No. 107,683
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **11 Claims**



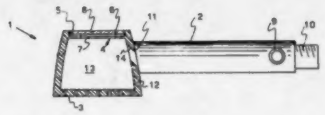
1. A capacitance type fuel quantity gauge for a fuel tank comprising, in combination, a first capacitor arranged to be mounted within a fuel tank and having a capacitance corresponding to the level of fuel in the tank, an enclosure having a wall defining an interior associated with said first capacitor, remotely located indicating means, an oscillator having an output, means for connecting said oscillator output to one side of said first capacitor, a pair of oppositely poled diodes disposed within the said enclosure interior, means for connecting one side of both of said diodes to the other side of said first capacitor, a pair of conductors each connected at one end to the other side of one of said diodes, and extending through openings in said enclosure wall, a pair of feedthrough capacitors in said enclosure wall, each arranged to accommodate one of said conductors for bypassing interfering signals on said conductors to a level below the threshold of said diodes and means for connecting the other ends of said diodes to said indicating means for indicating the quantity of fuel in the fuel tank.

4,281,543

HAND SHOWER AND TEMPERATURE INDICATING UNIT

Zeev Raz, 17 Keren Hayesod St., Beersheva, Israel

Continuation-in-part of Ser. No. 823,558, Aug. 11, 1977, Pat. No. 4,161,881. This application Apr. 16, 1979, Ser. No. 30,247
Claims priority, application Israel, Oct. 27, 1975, 48730
Int. Cl.³ G01K *13/02*
U.S. Cl. 73—343 R **14 Claims**



1. A hand shower and temperature indicating unit comprising:

a shower head consisting of a water chamber having a perforated water outlet bottom surface and wall surfaces;

a rigid water conduit section made predominantly of rigid plastic, rubber or the like that insulating materials and serving as the handle for said unit and integrally attached at one end thereof to a side wall surface of said chamber and having at the free end thereof means for attachment to a water supply line; and

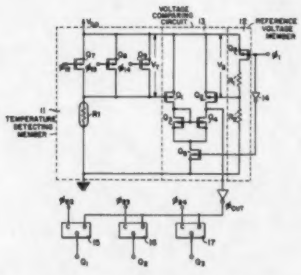
a liquid crystal temperature indicating means positioned within a compartment comprising a recess in and extending along a wall surface of said unit, said compartment comprising an interior heat transferring wall positioned along the flow path of the water passing through said unit to be directly contacted thereby.

4,281,544

TEMPERATURE DETECTING DEVICE

Noboru Kaneko, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 46,053
Claims priority, application Japan, Jun. 9, 1978, 53/69507
Int. Cl.³ G01K *7/20*
U.S. Cl. 73—362 SC **6 Claims**

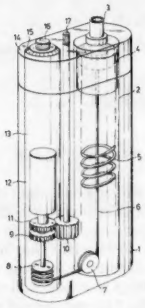


1. A temperature detecting device comprising in combination: a temperature detecting element having a resistance characteristic which varies as a function of temperature for sensing the temperature; a MOS-transistor connected in series with the temperature detecting element; a constant voltage source for maintaining a constant voltage; means for applying a timing signal to said MOS-transistor to turn ON said MOS-transistor; and a voltage comparing circuit for comparing the voltage across said MOS-transistor or the voltage across said temperature detecting element with the constant voltage of the constant voltage source when the MOS-transistor is turned ON by the timing signal and for producing an output signal representative of the temperature.

4,281,545
ASPIRATOR FOR AIR SAMPLING

Ernst C. G. Linder, Linnegatan 102, S-11523 Stockholm, Sweden

PCT No. PCT/SE79/00099, § 371 Date Dec. 24, 1979, § 102(e) Date Apr. 24, 1979, PCT Pub. No. WO79/00981, PCT Pub. Date Nov. 29, 1979
This PCT application filed Dec. 24, 1979, Ser. No. 177,751
Claims priority, application Sweden, Apr. 24, 1978, 7804649
Int. Cl.[3] G01N *1/24*
U.S. Cl. 73—864.62 3 Claims

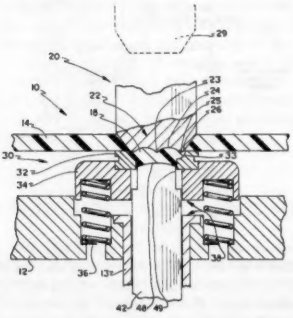


1. Aspirator for air sampling, there being arranged in a casing a removable pump cylinder (2) with accompanying plunger (4) and a motor (12) arranged to move the plunger for drawing in sample air through a sealable opening (3) in the pump cylinder, characterized in that the motor with an accompanying gearing device is arranged in the casing beside the pump cylinder and is coupled to a drum (8) arranged for winding up a string, the free end of the string being coupled to the plunger, which is biased by means of a spring (5) disposed in the casing, oppositely to the pulling direction of the string.

4,281,546
VARIABLE VOLUME SAMPLE CUTTER AND METHOD OF USE

M. Foster Fraleigh, 112 Lakeshore Dr., North Palm Beach, Fla. 33408

Filed Jul. 13, 1979, Ser. No. 57,392
Int. Cl.[3] G01N *1/04*
U.S. Cl. 73—864.44 13 Claims



1. An apparatus for the variable cutting of volumetric samples from elastomeric material, comprising:

(a) a fixed frame having a forming post housing;

(b) a die cutting apparatus having a pressured downward stroke, an unpressured upward stroke, a periphery and a surface means for concentrically manipulating the elastomeric material towards said periphery;

(c) a die receiving apparatus having tension-damping means for tensionally mounting said receiving apparatus on said frame and for damping said downward stroke against the elastomeric material, and having a die with an internal hollow having a dimension; said die having an annular groove at the uppermost area of said internal hollow; and,

(d) a volumetric sample adjustment apparatus having a movable forming post and adjustment means for moving said forming post, said forming post having a contact surface which resides in said internal hollow of said die, so that said movable forming post and said die dimension determine a volumetric cavity into which the elastomeric material may be manipulated, by said surface means during said downward stroke of said die cutting apparatus, thereby extruding excess elastomeric material between said periphery and said annular groove prior to cutting the material into the volumetric sample by said groove and said periphery during said upward stroke.

7. A method for cutting a volumetric sample for elastomeric material, comprising:

(a) placing a section of elastomeric material on a die receiving apparatus, said die receiving apparatus having tension-damping means for damping pressure against the elastomeric material and having a die with an internal hollow having a dimension; said die having an annular groove at the uppermost area of said internal hollow;

(b) adjusting a volumetric sample adjustment apparatus having a movable forming post within a fixed forming post housing and adjustment means for moving said forming post, said forming post having a contact surface which resides in said internal hollow of said die, so that said movable forming post and said die dimension determine a volumetric cavity;

(c) moving a die cutting apparatus into contact with the elastomeric material, said apparatus having a pressured downward stroke, an unpressured upward stroke, a periphery, and surface means for concentrically manipulating the elastomeric material toward said periphery, said surface means having an axis;

(d) manipulating and compressing during said pressured downward stroke a section of the elastomeric material into said volumetric cavity;

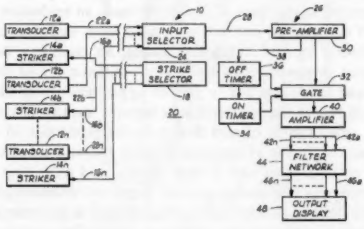
(e) extruding the elastomeric material from said volumetric cavity between said groove and said periphery during said pressured downward stroke; and,

(f) cutting the elastomeric material into a volumetric sample of homogeneous form by contacting the upper edge of said groove with said periphery during said unpressured upward stroke.

4,281,547
ELECTRONIC MINE ROOF BOLT TESTER

Stanley E. Hinshaw, and Charles F. Cole, Jr., both of Ponca City, Okla., assignors to Conoco, Inc. (formerly Continental Oil Company), Ponca City, Okla.

Filed May 10, 1979, Ser. No. 37,691
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—579 9 Claims



1. A device for testing mine roof stability, comprising:

means for exciting the mine roof to vibration at the natural occurring frequencies;

transducer means sensing mine roof vibration to generate characteristic electrical signal output;

gate means receiving input of said generated electrical signal output and providing a gate output signal for a predetermined duration;

timing means responsive to said characteristic electrical signal output to turn on said gate means after a first predetermined duration;

second timing means to turn off said gate means after a second predetermined duration;

means for amplifying said gate output signal and providing an amplified output;

filter means receiving said amplified output at a plurality of parallel inputs each to a respective one of plural frequency band filtering channels successively allotted within a predetermined total frequency range, each channel providing a band pass signal output;

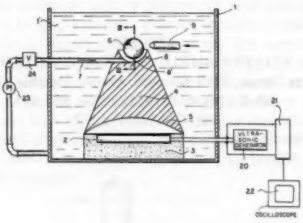
plural amplifier and indicator means each connected to a respective one of said channel signal outputs with each responsive to display indication when signals are detected within the respective designated frequency band.

4,281,548

METHOD OF TESTING ROTATIONALLY SYMMETRICAL BODIES, ESPECIALLY BALLS, FOR DEFECTS

Hans Köber, Schwebheim, Fed. Rep. of Germany, assignor to Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,755
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—593 **7 Claims**



1. In a method of testing a spheroidal workpiece body for surface and subsurface irregularities wherein a jet of a liquid is introduced tangentially into a clearance between said body and a surface spacedly juxtaposed therewith to rotate said body past a location at which the surface is subjected to scanning, the improvement which comprises intermittently varying the velocity of said jet to impart multiaxial rotation to said body during the monitoring.

4,281,549

EQUIPMENT FOR DISPLAYING SECTION IMAGES OF OBJECTS SUBJECTED TO ULTRASONIC EXAMINATION

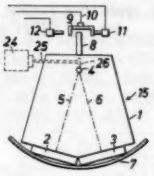
Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft m.b.H., Zipf, Austria

Filed Aug. 3, 1979, Ser. No. 63,241
Claims priority, application Austria, Jan. 11, 1979, 199/79
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—626 **11 Claims**

1. Equipment for the ultrasonic examination of a specimen in a section plane and for tracing moving section plane displays in response to said examination, comprising

transducer means including two ultrasonic transducers having axes which lie in a common plane and include a predetermined angle with each other, each of said sound transducers being operable to project an ultrasonic beam, to receive echoes originated in response to said beam and to derive electric echo signals from such echoes received,

a scanning mechanism for oscillating said transducer means in said plane through a predetermined angular range, which is at least as large as the angle included by said axes, and



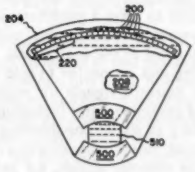
display means comprising a fluorescent screen and operable to display said echo signals on said fluorescent screen at locations associated with the locations at which said echoes have originated.

4,281,550

CURVED ARRAY OF SEQUENCED ULTRASOUND TRANSDUCERS

Kenneth R. Erikson, South Laguna, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,528
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **21 Claims**



1. Apparatus for producing and/or receiving a sector scanned, substantially parallel beam of ultrasound energy comprising:

an array, including a plurality of ultrasound transducer elements disposed along a curved line, each element being oriented to direct ultrasound energy toward and receive ultrasound energy from the center of the curve;

means for transmitting electrical pulses to and receiving electrical pulses from the transducer elements;

means for connecting a group of active transducer elements to the means for transmitting and receiving, the group of active elements comprising a preselected number of adjacent transducer elements in the array, said preselected number being greater than one and less than the total number of transducer elements in the array;

means for sequentially changing the elements in the active group to incrementally shift the active group along the curve; and

means for defocussing ultrasound energy produced and received by the transducer elements in the active group which means function to direct said energy between the active zone and a substantially parallel beam.

4,281,551

APPARATUS FOR FARFIELD DIRECTIONAL PRESSURE EVALUATION

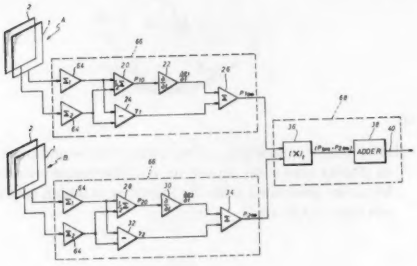
Lionel Gaudriot, Lozanne, and Michel Mercusot, Lyons, both of France, assignors to Societe pour la Mesure et le Traitement des Vibrations et du Bruit-Metravib, France

Filed Jan. 24, 1980, Ser. No. 114,972

Claims priority, application France, Jan. 29, 1979, 79 02813

Int. Cl.³ G01H *3/12*

U.S. Cl. 73—647 **20 Claims**



1. An apparatus for obtaining the farfield pressure intensity measurement in a given direction of a sonorous source placed in a fluid medium from pressure measurements taken in the nearfield of the source, the apparatus comprising:

(a) an acoustic antenna positioned close to the source and responsive to the acoustic pressure generated in the fluid by the source, for measuring the pressure generated by the source in its nearfield, said antenna having at least one receptor, each receptor of said antenna including two oppositely facing parallel planar arrays of acoustic detectors, each detector generating a detector signal, said planar arrays separated by a predetermined distance, and where said detectors in each said planar array of detection are positioned to form a predetermined matrix of detectors, said receptors positionable within said antenna to map the nearfield of the source; and

(b) a processing unit connected to said antenna and responsive to the detector signals for processing the detector signals, said processing unit including,

(1) a plurality of signal conditioning means, each signal conditioning means connected to a receptor and responsive to the detector signals, for generating the farfield pressure intensity field contribution of the acoustic energy received by each receptor, and

(2) a combining means responsive to the outputs from said plurality of signal conditioning means, for combining the farfield pressure intensity contribution signals from each receptor at each position used to map the nearfield of the source, the output from said combining means comprising the farfield pressure intensity in a given direction.

4,281,552

ELECTROMAGNETIC FLOWMETER

Peter Nissen, Rosdorf; Wilfried Kiene, Hann Mundun, and Eggert Appel, Dransfeld, all of Fed. Rep. of Germany, assignors to Fischer & Porter Company, Inc., Warminster, Pa.

Filed Jul. 5, 1979, Ser. No. 54,985

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1978, 2831570

Int. Cl.³ G01F *1/58*

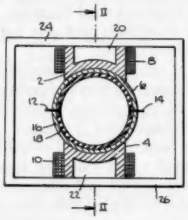
U.S. Cl. 73—861.12 **7 Claims**

1. An electromagnetic flowmeter comprising:

A. a cylindrical flow tube through which the fluid to be metered is conducted, said tube being formed of non-magnetizable metal whose interior is lined by an electrically-insulating material;

B. a pair of electrodes disposed at diametrically-opposed positions on said tube; and

C. means to establish a transverse magnetic field in said tube which is intercepted by the fluid conducted therethrough to induce a voltage therein which is transferred to said electrodes to yield a signal indicative of flow rate, said means including at least one core of solid ferromagnetic



material surrounded by a coil to which a low-frequency excitation current is applied, said core having a front face conforming to the periphery of the tube and having a cavity therein which lies in the central region thereof in which the intensity of the magnetic field is relatively weak due to skin effects, whereby the intensity of the field produced thereby is essentially unaffected by the cavity, whereas the mass of the core is substantially reduced.

4,281,553

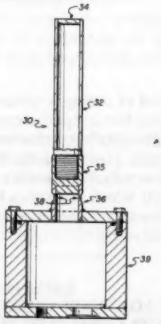
VORTEX SHEDDING FLOWMETER

Lohit Datta-Barua, 5210 Straight Arrow, Humble, Tex. 77338

Filed May 4, 1978, Ser. No. 902,677

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.24 **18 Claims**

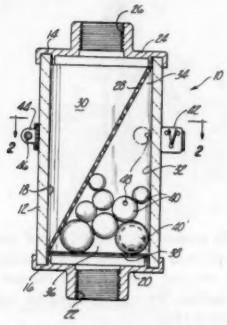


3. A method for measuring the rate of flow of a fluid, comprising the steps of:

introducing a cylindrical element having a longitudinal axis into a moving fluid to produce vortices shedding from the surface of said cylindrical element whereby periodic forces act on said cylindrical element; and

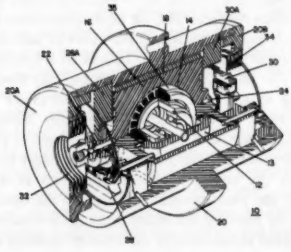
detecting directly on the surface of said cylindrical element the strains produced at a plurality of locations on said surface from said periodic forces, said plurality of locations including a first and second said locations falling on a line intersecting said axis and at least a third said location on said surface different from said first and second locations.

4,281,554
FLUID FLOW METER
Borje O. Rosaen, 4031 Thornoaks Dr., Ann Arbor, Mich. 48104
Filed Oct. 9, 1979, Ser. No. 82,672
Int. Cl.³ G01F *1/28*
U.S. Cl. 73—861.71 **12 Claims**



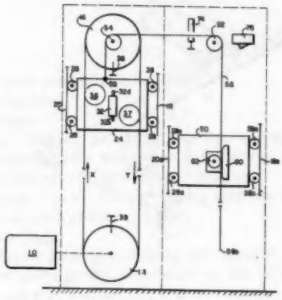
1. A fluid flow meter comprising:
a housing having an interior chamber with an upper end and a lower end at least a portion of said housing being constructed of a transparent material;
fluid inlet means fluidly connected to the lower end of the chamber,
fluid outlet means fluidly connected to the upper end of the chamber,
at least two flow responsive members disposed and freely movable within at least a portion of said chamber, said members having a density greater than the density of the fluid passing through the flow meter but vertically displaceable within said chamber in an amount proportional to the fluid flow rate through the flow meter,
means for retaining said member in said chamber; and
wherein said two members have different densities so that the vertical displacement of one member as a function of the fluid flow rate through the flow meter is different from the other member.

4,281,555
MOLDED INERTIAL SENSOR
Roy A. Schluntz, Melrose, and John R. Stemniski, Swampscott, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Filed Aug. 8, 1978, Ser. No. 932,139
Int. Cl.³ G01C *19/02, 19/30, 19/06*
U.S. Cl. 74—5 R **9 Claims**



1. A single degree of freedom inertial sensor comprising:
a gimbal assembly including a molded plastic body member having circular end sections at opposite ends thereof, and being adapted for pivotal motion about an output axis and for supporting a wheel member and associated drive means, said wheel member being adapted for rotary motion about a spin axis perpendicular to said output axis, and further including a molded plastic cylindrical sleeve member adapted to fit over said gimbal member including sections adapted to interfit with said end members to seal the region interior to said sleeve member.

4,281,556
DUAL CARRIAGE RECIPROCATOR WITH CONTINUOUSLY MOVING CHAIN
Joseph F. Weishew, 3934 Davisville Rd., Hatboro, Pa. 19040
Filed Jul. 2, 1979, Ser. No. 54,291
Int. Cl.³ F16H *19/06, 37/00*
U.S. Cl. 74—37 **4 Claims**



1. A dual vertical carriage reciprocator comprising:
a first housing;
a first carriage movably mounted in said first housing;
a first chain movably mounted in said housing and arranged to continuously present a first chain portion, moving in an upwardly direction, to one side of said first carriage and a second chain portion, moving in a downwardly direction, to an opposite side of said first carriage;
means, secured to the first housing, for moving said first chain;
a first chain sprocket rotatably mounted on said first carriage and arranged to operatively engage said upwardly moving chain portion and arranged to normally idly spin with chain motion;
a second chain sprocket rotatably mounted on said carriage, and arranged to operatively engage said downwardly moving chain portion and arranged to normally idly spin with chain motion;
first control means, secured to said first carriage, for permitting the spinning of said first chain sprocket when in a first state and for preventing the spinning of said first chain sprocket when in a second state;
second control means secured to said first carriage, for permitting the spinning of said second chain sprocket when in a first state and for preventing the spinning of said second chain sprocket when in a second state;
a control valve secured to said carriage, operatively connected to said first and second control means, and arranged to shift between first and second control states wherein said first control means is in its first state and said second control means is in its second state when said control valve is in said first control state and wherein said first control means is in its second state and said second control means is in its first state when said control valve is in said second control state;

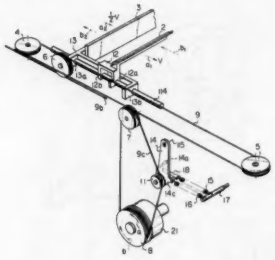
means movably secured to said first housing for shifting said control valve between said first and second control states;
a second housing;
a second carriage movably mounted in said second housing;
a second chain having one end fixed to said first carriage and the other end free; and
means secured to said second carriage for adjustably grasping said second chain intermediate its ends.

4,281,557

MEANS FOR DRIVING A MOVABLE BODY

Sakae Ohta, and Tatsuo Tani, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 57,900
Int. Cl.³ F16H *27/02, 7/12*
U.S. Cl. 74—89.22 **7 Claims**



1. Means for driving a movable body comprising:
a guide member;
a movable body reciprocatingly mounted along said guide member;
a member for driving said movable body so as to advance and return said movable body;
a wire connecting said movable body with said driving member;
a tension member arranged in a slack portion of the wire at the time of advancing movement of the movable body; and
first and second separate and parallel elastic means for applying a strong or a weak tension force, respectively, to said tension member, said weak tension force being applied to said tension member during advancing movement to said movable body and said strong tension force being applied to said tension member during returning movement of said movable body.

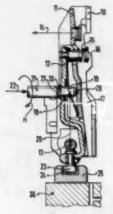
4,281,558

FUEL INJECTION PUMP CONTROL LEVER CONSTRUCTION

Hellmut Tomasch, Freiberg; Robert Bacher, Stuttgart; Karl Konrath, Ludwigsburg; Claus Köster, Ditzingen, and Heinz Nothdurft, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,741
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2823113
Int. Cl.³ F02D *1/04;* **F02M** *59/24*
U.S. Cl. 74—99 R **8 Claims**

1. Fuel injection pump control lever construction having
a rotatable and axially movable positioning element (**21**);
a control lever assembly including
a movable start lever (**12**) connected to and controlling the position of a fluid distribution element (**25, 26**) and formed as a plate or sheet-like element,
means (**13**) movably positioning the start lever,
and resilient means (**15, 17, 22**) engaging said start lever to maintain resilient contact thereof with the positioning element (**21**)
wherein, in accordance with the invention, the engagement surface on the control lever (**12**) engaged by the position-



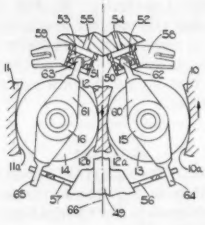
ing element (**21**) comprises a bolt (**18**) of wear-resistant material punch-pressed into the plate-like element forming the start lever, an end portion (**20**) thereof forming a wear-resistant surface for engagement by said rotatable positioning element (**21**).

4,281,559

VARIABLE SPEED TRANSMISSION SYSTEMS

Raymond Sharpe, Mirfield, England, assignor to Lucas Industries Limited, Birmingham, England

Continuation of Ser. No. 824,247, Aug. 12, 1977. This application Sep. 7, 1979, Ser. No. 73,230
Claims priority, application United Kingdom, Aug. 14, 1976, 33904/76
Int. Cl.³ F16H *15/08*
U.S. Cl. 74—200 **6 Claims**



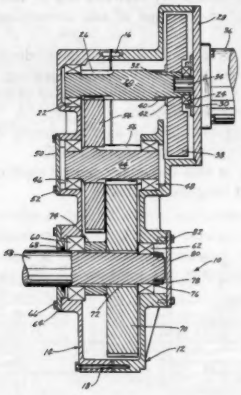
1. A variable ratio frictional drive gear comprising two axially spaced rotatable torus discs rotatable about a common axis, part toroidal surfaces on the respective axially presented faces of said discs respectively, an input connected to one of said discs, an output connected to the other of said discs, a set of circumferentially spaced drive rollers in frictional rolling contact with the part toroidal surfaces on said discs respectively, bearing structures on which said rollers are mounted respectively, each of the bearing structures being tiltable through a ratio angle with respect to the plane of the rollers when the rollers are parallel to said common axis to vary the distances from the common axis of the discs at which the rollers engage the two torodial surfaces of the discs respectively, means for moving the roller bearing structures tangentially with respect to said axis of the discs by appling a force to said bearing structures, said force being in a direction which is non-parallel with respect to a plane perpendicular to the common axis of the discs and means for accomodating effective movement of the roller bearing structures relatively to said common axis of the discs, in a direction parallel to the common axis of the discs.

4,281,560

SPEED REDUCER GEAR BOX WITH FLYWHEEL

Saul Herscovici, Waterloo, Iowa, assignor to Power Engineering and Manufacturing, Ltd., Waterloo, Iowa

Continuation of Ser. No. 883,199, Mar. 3, 1980, abandoned. This application Jan. 30, 1980, Ser. No. 117,005
Int. Cl.[3] F16H 1/20
U.S. Cl. 74—414 3 Claims



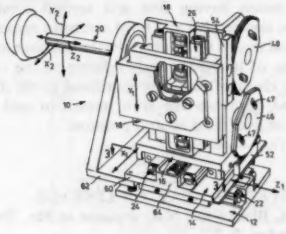
1. A speed reducer gear box comprising,
a housing means having an input shaft rotatably mounted therein and adapted to be connected to a power source, said input shaft having a toothed gear means thereon,
an output shaft rotatably mounted in said housing means and extending therefrom, said output shaft being adapted to be connected to a driven member,
an intermediate shaft mounted in said housing means and having a first toothed gear means mounted thereon which is in mesh with said toothed gear means on said input shaft, said intermediate shaft having a second toothed gear means thereon,
said output shaft having a toothed gear means mounted thereon which is in mesh with the said second toothed gear means of said intermediate shaft,
said toothed gear means on said input, intermediate and output shafts being of relative sizes such that said input shaft is rotated at a higher rate of speed than said intermediate shaft and said intermediate shaft is rotated at a higher rate of speed than said output shaft,
a flywheel,
means for mounting said flywheel on said input shaft for rotation of said flywheel in unison with said input shaft,
said input shaft being adapted for connection to a power source independently of said means for mounting said flywheel on said input shaft, and
said housing means comprising an enclosure for said flywheel, said toothed gear means, said intermediate shaft and at least portions of said input and output shafts,
said housing including first and second bearing means into which opposite ends of said input shaft are rotatably mounted, said flywheel being mounted on said input shaft at a position between said first and second bearing means, and
said housing including third and fourth bearing means into which opposite ends of said intermediate shaft are rotatably mounted and means for supporting said third and fourth bearing means on the same side of said flywheel and in radially overlapping relation thereto.

4,281,561

THREE AXES CONTROLLER

Ernest Groskopfs, Caledon East, Canada, assignor to Spar Aerospace Limited, Weston, Canada

Filed Oct. 9, 1979, Ser. No. 82,864
Int. Cl.[3] G05G 9/04
U.S. Cl. 74—471 XY 1 Claim



1. A three axes controller comprising;
a support platform,
a first carriage,
a first linear bearing mounting said first carriage on said support platform for movement in the direction of a first axis fore and aft of a first neutral position,
first centering means normally urging said first carriage to said first neutral position,
a second carriage,
a second linear bearing mounting said second carriage on said first carriage for movement in the direction of a second axis fore and aft of a second neutral position,
second centering means normally urging said second carriage to said second neutral position,
a third carriage,
a third linear bearing mounting said third carriage on said second carriage for movement in the direction of a third axis fore and aft of a third neutral position,
a third centering means normally urging said third carriage to said neutral position,
said first, second and third axes being orthogonally arranged and having a common origin when said carriages are in said first, second and third neutral positions,
a control lever having a proximal end and a distal end,
gimbal means mounting said control lever on said first carriage at a point spaced from the proximal and distal ends of the control lever for gimballed movement relative to said first carriage while retaining said lever against longitudinal movement relative to said first carriage in the direction of said first axis,
universal joint means at the distal end of said control lever mounting said distal end in said third carriage for universal movement with respect thereto in response to gimballed movement of the control lever,
said universal joint having a center of gyration coincident with the common origin of the orthogonally arranged axes when the first, second and third carriages are located in their neutral position,
said control lever having a longitudinal axis aligned with said first axis when said carriages are all in their neutral position whereby movement of the lever in a direction of its longitudinal axis effects movement of said first carriage in a direction of said first axis,
first signal means having first and second components mounted on said support platform and said first carriage respectively,
said first signal means being operative in response to movement of its first component with respect to its second component to generate an electrical signal proportional to the displacement of said first carriage with respect to said platform from said first neutral position,

second signal means having first and second components mounted on said first carriage and said second carriage respectively,

said second signal means being operative in response to movement of one of its components relative to the other to generate an electrical signal proportional to the displacement of said second carriage with respect to said first carriage from said second neutral position,

third signal means having first and second components mounted on said second and third carriages respectively,

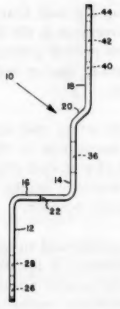
said third signal means being operative in response to movement of one of its components relative to the other to generate an electrical signal proportional to the displacement of said third carriage with respect to said second carriage from said third neutral position.

4,281,562

UNIVERSAL ADAPTOR LINKAGE

Ralph A. Venuto, Blackwood, N.J., assignor to Mr. Transmission, Inc., Camden, N.J.

Filed Mar. 13, 1979, Ser. No. 20,213
Int. Cl.³ G05G *9/18, 1/04*
U.S. Cl. 74—473 R **10 Claims**



1. A universal adaptor linkage for connection between the transmission and the shift or linkage rod associated with the gear selector lever of an automobile comprising

a lower linkage portion having at least one hole therein for selective connection to the shift or linkage rod,

a center linkage portion having a hole therein for connection to the gear shift control valve trunnion of the transmission,

a transverse linkage portion for connecting the upper end of the lower linkage portion to the lower end of the center linkage portion,

an upper linkage portion extending upwardly from the center linkage portion and having at least one hole therein for selective connection to the shift or linkage rod, and

an upper transverse linkage portion extending between the upper end of the center linkage portion and the lower end of the upper linkage portion.

4,281,563

DEVICE FOR ELIMINATING RESIDUAL UNBALANCE FROM A ROTATING ELEMENT

Paul Favrot, Gagny, France, assignor to Constructions de Clichy, France

Filed Apr. 4, 1979, Ser. No. 27,051
Claims priority, application France, Jun. 8, 1978, 78 17117
Int. Cl.³ F16F *15/22*; B24B *5/00*
U.S. Cl. 74—573 F **2 Claims**

1. In a device comprising a stationary central shaft, having a cylindrical outer bearing surface, and a rotary element rotatably mounted co-axially with said shaft by a bearing means on said cylindrical outer bearing surface of said stationary central shaft, residual unbalance eliminating means comprising:

a plurality of arcuate balancing chambers in said rotary element regularly coaxially distributed about the axis of rotation of said rotary element;

a plurality of corresponding annular channels in said cylindrical outer bearing surface of said stationary central shaft;

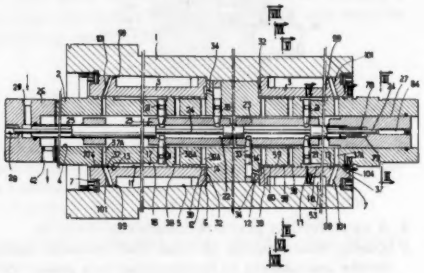
a plurality of radial holes in said rotary element each communicating respectively between one of said arcuate balancing chambers and one of said corresponding annular channels;

a plurality of corresponding longitudinal ducts in said stationary central shaft each communicating respectively with one of said corresponding annular channels;

a source of oil under pressure;

an oil-supplying chamber in said stationary central shaft communicating with said source of oil;

an oil chamber in said stationary central shaft communicating with said longitudinal ducts;



a first calibrated constriction means in said stationary central shaft between said oil-supplying chamber and said oil chamber;

a source of compressed air;

a compressed air chamber in said stationary central shaft communicating with said source of compressed air;

a plurality of regulating pintles with inlets and outlets in said stationary central shaft, said inlets of said pintles communicating with said compressed air chamber and each of said outlets of said pintles communicating respectively with one of said corresponding longitudinal ducts;

a plurality of second constriction means in said rotary element each having inlet and outlet means, said inlet means of each of said second constriction means communicating respectively with one of said arcuate balancing chambers; and

an oil and compressed air leakage escape means in said rotary element and said stationary central shaft communicating with said outlets of said second constriction means and having an outlet from said stationary central shaft.

4,281,564

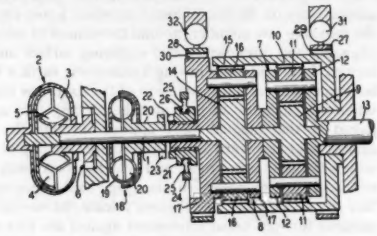
POWER TRAIN OR TRANSMISSION

John W. Hill, deceased, late of Grayslake, Ill. (by Gwendolyn K. Hill, administrator), assignor to Gwendolyn K. Hill, Grayslake, Ill.

Filed Mar. 8, 1979, Ser. No. 18,742
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—665 D **12 Claims**

1. A power train variable from substantially a 1:1 ratio to a higher ratio, comprising a driving member and a driven member, a pair of planetary gear assemblies, each including a sun gear, a ring gear and a planetary carrier having at least one planetary gear operatively connecting the associated ring and sun gears, said gear assemblies having different gear ratios,

both planetary assemblies having their sun gears rotatable by said driving member, said driven member being operatively connected to the planetary carrier of one of said assemblies, means connecting said ring gears for rotation as a unit, and means for selectively rotating the planetary carrier of the other



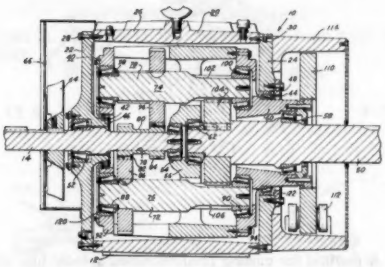
of said assemblies at desired speeds with respect to the driving member, whereby the overall ratio between the driving and driven members is variable in dependence upon the relative speeds of said driving member and said planetary carrier of said other of said assemblies.

4,281,565

CONTROLLED START SPEED REDUCER

Jerry L. Lower, Mishawaka, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Mar. 23, 1979, Ser. No. 23,098
Int. Cl.³ F16H *3/44, 1/28*
U.S. Cl. 74—789 **10 Claims**



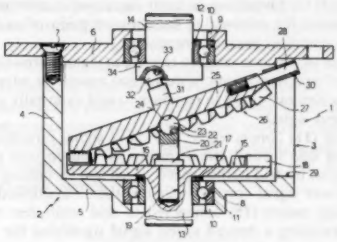
1. A controlled start speed reducer comprising a fixed outer housing having opposite end walls, an inner housing mounted in said outer housing for rotation therein, one of said walls having an inner extending annular boss with a center hole and the other of said walls having a center opening of a diameter larger than said annular boss, an extension rigidly connecting said inner housing and projecting through said opening, a bearing means on said annular boss on which one end of said inner housing is journaled, bearing means between said extension and the respective end wall in said opening on which the other end of said inner housing is journaled, input and output shafts in axial alignment extending axially into said inner housing, a plurality of gear trains mounted for rotation in said inner housing interconnecting said input and output shafts, a disc connected to said extension for rotation therewith, and means connected to said outer housing for restraining the rotation of said disc such that said inner and outer housings function as torque reaction elements during normal acceleration and full operation of the reducer.

4,281,566

SPEED REDUCTION UNIT

Enzo Brusasco, Turin, Italy, assignor to Roltra S.p.A., Turin, Italy

Filed Jan. 30, 1979, Ser. No. 7,743
Claims priority, application Italy, Feb. 2, 1978, 67198 A/78; Apr. 28, 1978, 67968 A/78
Int. Cl.³ F16H *1/28*
U.S. Cl. 74—800 **9 Claims**



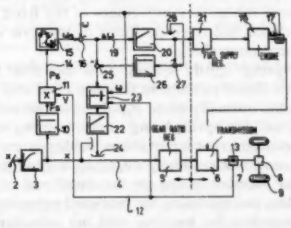
1. A speed reduction unit comprising an outer casing, an input shaft and an output shaft coaxial with respect to one another and rotatably supported by said casing, a first gear integral with said output shaft, a second gear coupled with said first gear, and connection means between said second gear and said input shaft, the number of teeth of said two gears differing from one another by at least one tooth; and in which said first gear is a face gear and said second gear is a bevel gear sloping with respect to the first gear and positioned to face it, said second gear being centrally supported inside said casing by means of a ball joint support in order to oscillate relative to said casing and said first gear about a point of the common axis of said two shafts, said connection means comprising a central axial projection extending from said second gear, key means being provided for angularly locking said second gear relative to said casing, said ball joint support comprising an upright extending axially from said first gear towards said second gear and a ball interposed between the free end of said upright and said second gear, a first seating spherical in shape for said ball being formed on said upright, a second seating spherical in shape for said ball being formed centrally on said second gear.

4,281,567

SYSTEM FOR OPTIMIZING THE FUEL CONSUMPTION OF AN INTERNAL COMBUSTION ENGINE

Franz Maurer, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,662
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1978, 2843256
Int. Cl.³ B60K *41/04*
U.S. Cl. 74—866 **6 Claims**



1. In a motor vehicle having an internal combustion engine

(18), first sensor means (17) connected to said internal combustion engine for furnishing an engine speed signal indicative of the speed thereof, hydrostatic transmission means connected to said internal combustion engine and having a continuously adjustable transmission ratio, second sensor means (13) coupled to said hydrostatic transmission means for furnishing an output speed signal indicative of the output speed thereof, means (21) connected to said internal combustion engine for adjusting the fuel supply of said internal combustion engine in accordance with a fuel control signal applied thereto, and means (2) for furnishing an input signal under external control,

a system for minimizing fuel consumption of said internal combustion engine comprising

means (4, 5) connected to said input signal furnishing means and said hydrostatic transmission means for adjusting said transmission ratio in response to said externally controlled input signal;

means (11) connected to said input signal furnishing means and said second sensor means for multiplying said input signal by said output speed signal and furnishing a desired power signal corresponding to the so-multiplied values;

storage means (15) connected to said multiplier means for furnishing a desired speed signal signifying the optimum engine speed for minimum fuel consumption in response to said desired power signal;

means (16) connected to said storage means and said first sensor means for comparing said desired engine speed signal to said actual engine speed signal and furnishing a first error signal corresponding to the difference therebetween; and

means (20) interconnected between said comparing means and said fuel supply adjusting means for furnishing said fuel control signal to said fuel supply adjusting means in response to said first error signal.

4,281,568

QUICKLY ADJUSTABLE RATCHET WRENCH

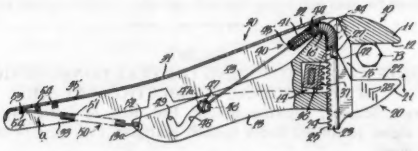
Werner W. Martinmaas, 650 S. Rock Blvd.-Unit 3, Reno, Nev. 89502

Filed Jun. 8, 1979, Ser. No. 46,801

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.³ B25B *13/14*

U.S. Cl. 81—134 **10 Claims**



1. In a quickly adjustable ratchet wrench for rotating objects which have angularly related flat surfaces surrounding an axis of rotation, said wrench being of the type which has a fixed jaw member having a jaw element and a rearward extension, a movable jaw member having a jaw element and an elongated engaging surface, and means mounting said movable jaw member for linear translatory movement of the fixed jaw member between closed and open positions of said jaw elements, the improvement comprising:

a jaw spring lightly biasing said movable jaw member toward closed position so that said fixed and movable jaw elements normally close lightly upon an object between them, said jaw spring being a tension spring which has one end secured to the top of the movable jaw member and the other end telescopically engaging a proximal end of an anchor member, a lug on the distal end of said anchor member, and means on the rearward extension of the fixed jaw member for locating said lug selectively in a first position with the spring tensioned by the anchor member or in a second position with the proximal end of the anchor member telescoped along the spring to eliminate the spring tension;

locking means including a locking face on the fixed jaw member which is selectively engageable with said engaging surface to lock the jaw elements closed upon an object between them;

and a lever pivoted on the fixed jaw member on a pivot axis substantially on the line of linear translatory movement of the movable jaw member, pivotal movement of said lever engaging and disengaging said engaging surface and said locking face, said lever having a transverse surface which bears on said rearward extension of the fixed jaw member when the engaging surface and the locking face are engaged so that manual force applied through the lever against said rearward extension rotates an object upon which the jaws are closed, and which pivots away from said rearward extension to disengage said engaging surface and locking face and thereby release the movable jaw member for free linear movement against the bias of the spring, said lever being so related to said rearward extension that user may manually grip the lever with one hand while leaving the rearward extension free to permit manual reciprocation of the wrench with the movable wrench jaw alternately locked to grip opposite flat surfaces of an object between the jaw elements to rotate said object and released for free rotation of the jaw elements around angles between adjacent flat surfaces of the object without rotating said object.

4,281,569

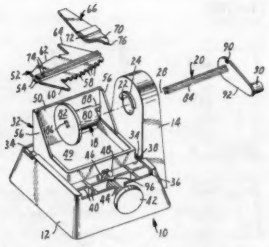
CLAY CUTTING LATHE AND METHOD

James F. Kubiatowicz, Minneapolis, Minn., assignor to Custom Concepts, Incorporated, Minneapolis, Minn.

Filed Dec. 28, 1979, Ser. No. 107,866

Int. Cl.³ B23B *3/00*

U.S. Cl. 82—1 C **12 Claims**



9. A method for cutting predetermined spindle-like objects from moist clay comprising the steps of:

packing the clay around a rotor assembly into a somewhat cylindrical shaped clay mass;

rotating the rotor assembly to rotate the clay mass;

cutting grooves in the clay to a depth at which the surface of the object will be formed to form spaced annular clay ridges;

cutting away the ridges and shaping the surface of the spindle-like object;

wetting the clay with water during said cutting steps; and

removing the finished spindle-like object from the rotor assembly.

4,281,570

ROTARY BLADE POWER SAW ATTACHMENT

Jay L. Hill, 2401 33rd Ave., North, Texas City, Tex. 77590

Filed Mar. 10, 1980, Ser. No. 129,023

Int. Cl.³ B27B *5/22*

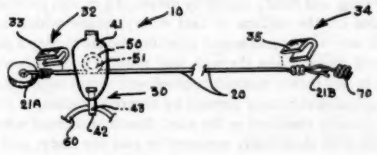
U.S. Cl. 83—477.2 **5 Claims**

1. An attachment to a rotary blade power saw, which attach-

ment comprises a platform having a planar upper surface an opening suitable for the protrusion of a circular saw blade through the platform, a fastener means suitable for fastening a rotary blade power saw to the underside of the platform, and support legs attached to the underside of the platform; wherein said support legs are of a length and shape adapted to rest on the underlying support structure of a workbench while maintaining the upper surface of the platform in a plane containing

the smooth upper surface of the workbench; wherein said workbench comprises a pair of elongated vise members mounted on a support structure and disposed in side-by-side relation to each other with at least one of said vise members defining a substantially smooth upper surface upon which a work-piece can be placed and at least one of said vise members being mounted on said support structure so as to be moveable relative to the other one of said vise members.

4,281,571
PAPER CUTTER ASSEMBLY
Rowland K. Yates, 3413 Woodvale Dr., Midwest City, Okla. 73110
Filed Aug. 22, 1979, Ser. No. 68,826
Int. Cl.³ B26F *3/00*
U.S. Cl. 83—542 **3 Claims**



1. A paper cutter assembly, in combination with a roll of paper having a width, and with a means for supporting and unrolling said paper from said roll, comprising:

a. a displaceable stationary single-strand cutter wire member disposed across said width of said roll of paper and simultaneously disposed so as to be adjacent to and under and along said paper when said paper is unrolled;

b. and, means, cooperatively useable with said displaceable stationary single-strand cutter wire member, for assisting in cutting paper unrolled from said roll and that is positioned adjacent to and on and along said displaceable stationary single-strand cutter wire member, wherein this paper-cutting assisting means is movable along said displaceable stationary single-strand cutter wire member, and wherein said movable paper-cutting assisting means further includes:

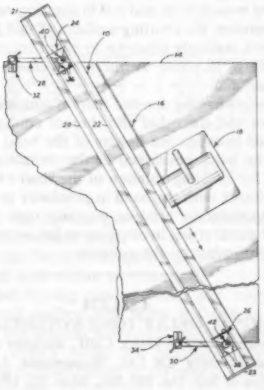
(1) a frame member comprising a first portion in the shape of an inverted "U" and a second portion connected to said first portion in a transverse position, with said second portion having a hole therein;

(2) a pulley member connected to, and rotatable within, said first portion of said frame member, with said pulley member having a grooved rim;

(3) and, a handle member removably connected to said transverse second portion of said frame member by, and at, said hole therein;

whereby, when paper unrolled from said roll is positioned adjacent to, and is positioned on and along, said displaceable stationary single-strand cutter wire member, and when thereafter said single-strand wire member is pulled and is displaced with the use of said paper-cutting assisting means which is pulled and is moved along said cutter wire member and along said width of said unrolled paper, then said unrolled paper is cut straightly, cleanly, quickly, and safely from said roll by said movement of said displaced wire cutter member.

4,281,572
SAW GUIDE FOR ANGLE CUTS
Marvin S. Stovall, 2211 Hawkins La., Eugene, Oreg. 97405
Filed Nov. 19, 1979, Ser. No. 76,934
Int. Cl.³ B27B *5/00*
U.S. Cl. 83—745 **3 Claims**



1. A guide for use with a powered hand saw for making controlled cuts at an infinite number of angles in a workpiece, said guide comprising

elongate rail means defining a cutting path for such a saw,

a pair of carriages mounted on said rail means for independent movement therealong to an infinite number of different spaced positions relative to one another, with each carriage inluding angular position markings related to preselected angular positions, and

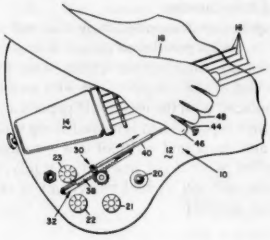
means for each carriage for clamping the same onto a workpiece at an infinite number of angles relative thereto, each of said clamping means including an elongated arm mounted adjacent one of its ends on the associated carriage for swinging in a plane common with the arm in the other clamping means to accommodate adjustment of the rail means to different angles relative to a workpiece, and a clamp assembly attached to the other end of arm for clamping onto a workpiece, and further including pointer means movable as a unit with the arm for pointing toward the associated position markings.

4,281,573

MANUAL VOLUME CONTROL DEVICE FOR GUITAR OR THE LIKE

Dennis W. Yarema, 9271 Thistle Rd., Anaheim, Calif. 92804

Filed Oct. 5, 1979, Ser. No. 82,377
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **6 Claims**



1. In a device for use with an electric guitar having electrical controls with rotatable shafts extending through the face thereof, the combination comprising:

a first member configured for being received on the shaft of an electrical control;

a support member configured for securing to the face of the guitar in proximate relation to said shaft, said support member having a rod affixed thereto in generally parallel relation to the face of the guitar;

a second elongate member with an elongate aperture therein slidably mounted on said rod in abutting relation with said first member, the abutting surfaces of said first and second members matingly coacting to effect rotation of said first member in response to linear movement of said second member; and

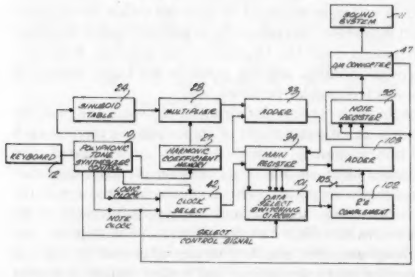
handle means having one end thereof coupled to said second member and the other end thereof configured for being received between the fingers of the hand of the guitarist with the hand positioned at the strumming area of the guitar for enabling rotation of the shaft of the control by the guitarist with the hand in proximity to the strumming area whereby to produce varying type sounds from a picked guitar string in response to linear movement of said second member by the guitarist.

4,281,574

SIGNAL DELAY TONE SYNTHESIZER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Continuation of Ser. No. 885,561, Mar. 13, 1978, abandoned. This application Sep. 10, 1979, Ser. No. 73,665
Int. Cl.³ G10H *1/12, 7/00*
U.S. Cl. 84—1.19 **8 Claims**



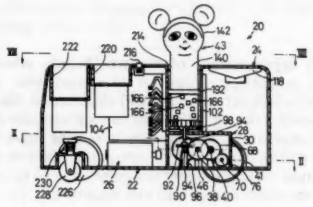
1. A tone synthesizer comprising: means generating a plurality of digital words in sequence at a predetermined rate at a first output, said words defining the amplitude of spaced points on the waveform of a periodic analog signal, means generating the same sequence of digital words at a second output at the same rate but delayed in time an integral multiple of the sequence time between successive words, means subtracting each word generated at the first output from the coincident word from the second output to generate a resultant word, and a digital-to-analog converter coupled to the output of the subtracting means for converting the resultant words to an analog voltage signal.

4,281,575

TOY INCLUDING A MUSIC PLAYING DEVICE THEREIN

Yoshifumi Nakamura, Numazu, Japan, assignor to Nanbu Industrial Co., Ltd., Numazu, Japan

Filed Jun. 11, 1979, Ser. No. 47,327
Claims priority, application Japan, Jun. 14, 1978, 53/81561[U]; Mar. 2, 1979, 54/26371[U]; Mar. 5, 1979, 54/26704[U]
Int. Cl.³ G10H *3/03*
U.S. Cl. 84—1.28 **3 Claims**



1. A toy incuding a music playing device therein comprising: a toy body; electronic musical scale generating means mounted in said toy body and including sound selecting means corresponding to the sounds composing the musical scale so as to produce electrical signals of the sounds corresponding to said sound selecting means; a speaker mounted in said toy body of regenerating the output of said musical scale generating means; rotary means rotatably mounted in said toy body; a mechanism for rotating said rotary means by means of a motor; protrusions provided on the surface of said rotary means which act to operate selectively said sound selecting means to play a predetermined music piece through said musical scale generating means as said rotary means is rotated; said rotary means including a cylindrical rotator formed by securely stacking a plurality of circular members in the axial direction thereof which is adapted to be detachably mounted in said toy body; said protrusions being provided on the peripheral surface of each of said circular members integrally with the circular member.

4,281,576

BRIDGE FOR STRINGED INSTRUMENTS

C. Leo Fender, 2851 Rolling Hills Dr., Sp. 33, Fullerton, Calif. 92635

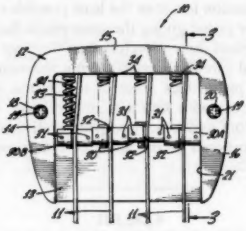
Filed Oct. 29, 1979, Ser. No. 89,164
Int. Cl.³ G10D *3/04*
U.S. Cl. 84—298 **1 Claim**

1. A bridge for a stringed instrument including a body and a neck comprising:

a base member rigidly connectable to said body of said instrument, said base member having a first section connectable to said body of said instrument and a second section connected to one end of said first section and extending perpendicular thereto;

a plurality of drums, each of said drums having an internally threaded hole extending laterally therethrough;

a plurality of bolts extending through said second section of said base member and through said holes in said drums for connecting said drums to said base member in end-to-end relationship for independent lateral movement in two orthogonal directions whereby rotation of said bolts relative to said drums moves said drums towards or away from said second section of said base member;



a fixed abutment associated with said base member, adjacent one end of the first one of said drums; and

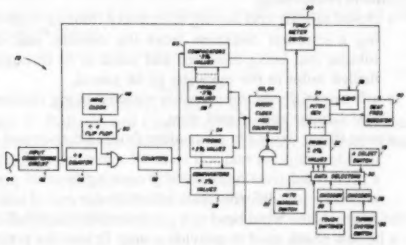
a plurality of holes in said second section of said base member, one for each of said drums, said holes being positioned intermediate said bolts, said strings extending through said holes in said base member and over said drums at an acute angle relative to said bolts without engagement with said bolts so as to apply an axial force to each of said drums and to urge all of said drums axially into contact with each other and said first drum into contact with said abutment.

4,281,577

ELECTRONIC TUNING DEVICE

Peter Middleton, Box 255, DeKalb, Ill. 60115

Filed May 21, 1979, Ser. No. 40,558
Int. Cl.³ G10G *7/02*
U.S. Cl. 84—454 **6 Claims**



1. A tuning device for tuning musical instruments comprising:

(a) pitch generator means for providing a series of audio frequencies that approximate the notes of a plurality of tuning systems over a range of at least one octave;

(b) a utilization circuit coupled to said pitch generator means;

(c) first memory means having addressable storage locations for storing a plurality of data signals representative of the audio frequencies produced by said pitch generator means;

(d) data selection means for addressing the storage locations of said first memory means to retrieve and apply data signals to said pitch generator means representative of only one of said tuning systems and only one of said audio frequencies in the selected tuning system, said data selection means being capable of applying data signals representative of the audio frequencies in the selected tuning system in any desired sequence;

(e) an accoustical pick-up microphone;

(f) an input conditioning circuit connected to said microphone for recovering the fundamental frequency of a note produced by a musical instrument and producing a data output signal representative thereof; and

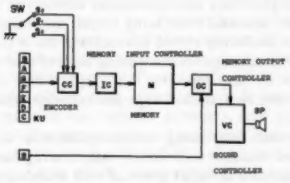
(g) signal tracking means including (a) sweep means for simultaneously addressing the storage locations of said first, second and third memory means, (2) comparator means for comparing the addressed data signals from said second and third memory means with the data output signal from said output conditioning circuit, and (3) gate means coupled to said comparator means for turning off said sweep means when the data output signal from said input conditioning circuit falls within the frequency range established by said second and third memory means, for applying the data signal from the last addressed storage location of said first memory means to said pitch generator means and for enabling said utilization circuit.

4,281,578

CLEF AND SCALE INDICATOR FOR MUSIC INSTRUMENTS

Akira Tanimoto, Kashihara, and Tomohiro Inoue, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 29, 1979, Ser. No. 24,952
Claims priority, application Japan, Mar. 31, 1978, 53-39064
Int. Cl.³ G09B *15/04*
U.S. Cl. 84—470 R **6 Claims**



1. A system for providing musical note information to a musical instrument comprising:

input key means for providing information representative of any desired note within an octave;

an endless belt having musical staves and notes imprinted thereon, said endless belt being shiftable to produce a display of the musical notes of a desired octave;

octave shift switch means for providing desired octave information corresponding to the octave diplayed by said endless belt; and

encoder means for combining said desired octave information with said information representative of any desired note within an octave to produce a desired note information signal;

said desired note information signals produced by said encoder being utilized by said musical instrument to create audible tones associated with said desired note information signals.

4,281,579

TEACHING AID FOR KEYED MUSICAL INSTRUMENTS

Timothy J. Bennett, Sr., 309 Mary St., Westerville, Ohio 43081

Filed May 31, 1977, Ser. No. 801,729
Int. Cl.³ G09B *15/02, 15/08*
U.S. Cl. 84—478 **8 Claims**

1. An apparatus for use as an educational aid in learing to play a keyboard musical instrument, said apparatus comprising:

(a) a musical instrument keyboard;

(b) a plurality of illuminable, two-state displays, one display

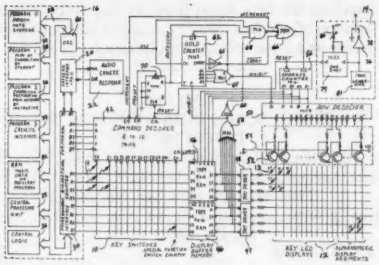
in spatial correspondence with each key of said keyboard, said illuminable displays being electrically connected in a display matrix array;

(c) a plurality of alphanumeric digit displays having their segments electrically connected in said display matrix array;

(d) switch means mechanically connected to each key of said keyboard for detecting each key depression, said switch means being electrically connected in a switch matrix array;

(e) a signalling means;

(f) interfacing digital data circuit means connected to said displays, said switch means and said signalling means, for interfacing data transfer from said switch means to a microcomputer and from a microcomputer to said displays and said signalling means and for actuating said displays; and



(g) a digital data microcomputer connected to said switch means and said interfacing circuit means, said microcomputer including stored instructions and a stored sequence of musical steps for comparing each of said stored musical steps in sequence to key depressions and signalling whether each of said steps and said depressions are identical;

wherein said interfacing means includes a decoder circuit means and wherein said switch matrix array has a first set of lines connected to input ports of said microcomputer and its second set of lines connected to outputs of said decoder means, said decoder means having its inputs connected to output ports of said microcomputer, and wherein said switch means includes a series connected single pole, single throw switch and a diode connected to electrical intersections of the sets of lines of said switch matrix array.

4,281,580

TENSIONING DEVICES

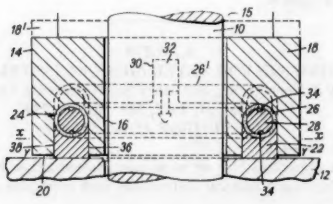
Thomas W. Bunyan, London, England, assignor to Pilgrim Engineering Development Ltd., London, England

Continuation of Ser. No. 873,828, Jan. 31, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,661

Claims priority, application United Kingdom, Feb. 2, 1977, 4284/77

Int. Cl.³ F16B *35/06*

U.S. Cl. 411—548 **34 Claims**



1. A tensioning device comprising a body having piston means housed in a recessed end-face of the body and movable parallel to an axle extending through the body, and means for supplying hydraulic fluid behind the piston means to urge the piston means in an axial direction which leads out through said end-face, said piston means having two piston face areas, one on each of a transverse plane of the body containing said axis, said piston and face areas of said piston means having a concavely curved inner side-face with respect to said axis and an extended convexly curved outer side-face, the outer side-face being dimensioned such that the piston means has an overall transverse dimension less than the least possible overall diameter of an annular piston giving the same piston face area, and an overall longitudinal dimension less than the least possible for a pair of opposed circular pistons giving the same piston face area, said two piston face areas of said piston means having centroids collinear with said axis of the body, the centroids being spaced from said axis by respective distances which are inversely proportional to the areas of the respective pistons face areas.

4,281,581

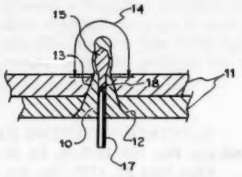
HIGH-STRENGTH BLIND RIVET

Liam R. Jackson, 183 Alpine St., and Allan H. Taylor, 30 Huxley Pl., both of Newport News, Va. 23606

Filed Sep. 24, 1979, Ser. No. 78,035

Int. Cl.³ F16B *19/12*

U.S. Cl. 411—19 **4 Claims**



1. A blind rivet for use as a means for joining two or more members comprising:

a closed tubular end having selectively thinned walls defining a constant thickness from the outside, said closed tubular end being annealed and sized to fit through predrilled holes in the members to be joined,

a soft essentially incompressible material being enclosed by said tubular end of said rivet,

a snug fitting drive pin protruding from said rivet and being used to compress said soft material when driven flush with a preformed rivet head thereby creating internal pressure which in turn deforms said closed tubular end of said rivet or upsets the blind head to a predetermined size and shape,

a hollow shank used to provide a snug fit into the predrilled holes which also encloses said soft material and that portion of said drive pin inside said rivet prior to forming,

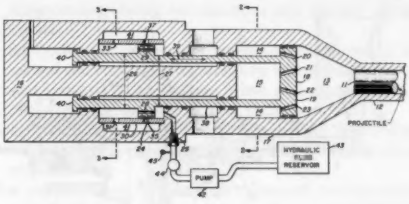
a preformed rivet head that is penetrated by said drive pin; and,

a headed pin on the inner end of said drive pin having a head portion that is considerably smaller in diameter than said drive pin and having a shank portion connected to said drive pin of less diameter than said head portion, said headed pin being embedded in said soft material; to retain said drive pin in said soft material, said drive pin being pressed into said soft material during manufacture, which in turn enlarges said selectively thinned portion of said closed tubular end of said rivet to an outer diameter equal to or less than the said predrilled holes to retain the combination of said soft material and said drive pin, said selectively thinned portion thereby having a slightly bulged configuration.

4,281,582
CONTROL PISTON FOR LIQUID PROPELLANT GUN INJECTOR

Vance W. Jaqua, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 19, 1979, Ser. No. 50,274
Int. Cl.³ F41F *1/04*
U.S. Cl. 89—7 **1 Claim**



1. The improvement in a regenerative feed liquid propellant gun having a propellant injection piston and a charge chamber, said improvements for controlling the movement of the said injection piston, comprising:

a. a control piston having a first face with a first effective pressure area and a second face with a second effective pressure area;

b. means for rigidly attaching said control piston to said propellant injection piston;

c. means for applying hydraulic fluid under pressure to the first face of the said control piston;

d. means providing a fixed orifice through said control piston from said first face to said second face for providing a determined flow of hydraulic fluid therethrough;

e. a cylindrical sleeve cooperating with said control piston, said cylindrical sleeve having spaced apart ports opening to the first and second faces of said control piston; and

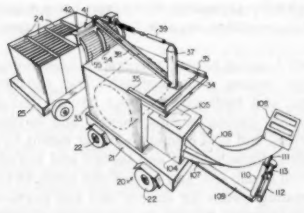
f. means cooperating with said ports to provide a by-pass passage for the flow of hydraulic fluid; and

g. means moving said control piston relative to said ports for restricting the flow of hydraulic fluid through said by-pass passage to vary the resistance to the movement of said control piston.

4,281,583
AMMUNITION SUPPLY SYSTEM

Stephen F. Pollock, and Charles E. Benedict, both of Tallahassee, Fla., assignors to Wayne H. Coloney Company, Inc., Tallahassee, Fla.

Filed Jan. 9, 1979, Ser. No. 2,122
Int. Cl.³ F42B *39/12*
U.S. Cl. 89—33 BB **3 Claims**

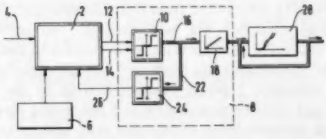


1. An ammunition supply system for supplying ammunition to an armament system comprising a housing, drum means rotatably mounted within said housing, means for driving said drum means, said drum means having a plurality of flutes disposed generally parallel with the axis and arranged in side-by-side relationship around the entire periphery thereof, said drum having at least two spaced annular grooves disposed around the periphery thereof, first and second interface units in spaced relationship with one another adjacent the sides of said drum means, each of said interface units having first and second spaced partition means, said first partition means having arm portions located within one of said grooves of said drum means and said second partition means having arm portions located within another of said grooves of said drum means, an ammunition belt including a plurality of tubular members, flexible means connecting said tubular members in spaced generally parallel relationship with each other, each of said tubular members normally receiving a round of ammunition with one end of the ammunition extending outwardly therefrom, said first interface unit having a first transfer means for placing said tubular members and said rounds of ammunition within the flutes adjacent to one end of said drum means, cam means positioned within said housing and in spaced relationship to said drum means, said cam means extending substantially entirely around said drum means, said cam means engaging said tubular members and moving said tubular members axially away from said rounds of ammunition so that said rounds of ammunition and said tubular members are in axially spaced relationship with each other on said drum means, said first and second partition means of said second interface unit removing said rounds of ammunition from said drum means while said tubular members remain on said drum means, second transfer means, said second transfer means including a pair of rotating guide means disposed on opposite sides of said first and second partition means adjacent to said arm portions and a central rotating drive means mounted therebetween, said rotating guide means cooperating with said partition means and said central rotating drive means for transferring said rounds of ammunition from said second interface unit to the armament system while simultaneously removing the empty shell casings from the armament system and placing said empty shell casings within said flutes of said drum means so as to be in substantial axial alignment with said tubular members, said cam means moving said tubular mean axially of said shell casings to that the tubular members receive said shell casings, said first transfer means of said first interface unit simultaneously removing said tubular members and shell casings from said drum means as said tubular members and said rounds of ammunition are placed within the flutes of said drum means, and means for discharging said tubular members from said housing.

4,281,584
ELECTRO-HYDRAULIC REGULATING DRIVE AND A FAST-SWITCHING MAGNETIC VALVE FOR USE THEREIN

Reiner Onken, Brunswick; Günter Mansfeld, Grassel, and Johannes Tersteegen, Brunswick, all of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt, Cologne, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,782
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2823960; Jan. 8, 1979, 2900473
Int. Cl.³ F15B *21/08*; B64C *13/24*
U.S. Cl. 91—1 **9 Claims**



1. An electro-hydraulic actuator for use in the control of surfaces in aircraft, comprising a hydraulic regulating cylinder having a piston located intermediate therein to define separate chambers, said piston being bilaterally loaded and disposed in

a predetermined adjusted position and being operatively interconnected to a surface for the control thereof, two bistable controlled ball valves communicating with said cylinder and through which predetermined discrete amounts of hydraulic fluid of an hydraulic system are directed for flow into a preselected chamber of said cylinder for effecting the control of said piston, a process computer, valve control means operatively interconnected to said ball valves and electrically communicating with said process computer, and sensor means located between said ball valves and said cylinder and being electrically interconnected to said process computer, said valve control means being responsive to said process computer and receiving switching pulses therefrom for moving said ball valves to an open or closed position and said sensor means being responsive to a variation in the position of said piston to detect a differential condition between said ball valves and said cylinder and delivering electrical signals to said process computer to confirm that the ball valves have operated in accordance with the switching pulses received by said valve control means from said process computer.

4,281,585

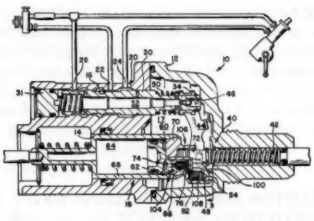
HYDRAULIC BRAKE BOOSTER AND VALVE MEMBER

Dean E. Runkle, LaPorte; Louis S. Tang, Mishawaka, both of Ind., and Gregory K. Harrison, Niles, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 885,825, Mar. 13, 1978, abandoned. This application Jan. 16, 1980, Ser. No. 112,508

Int. Cl.[3] **F15B** *13/10;* **F01B** *25/02*

U.S. Cl. 91—5 **14 Claims**



1. In a hydraulic brake booster having a housing defining a pressure chamber, a piston mounted in the housing and movable relative to the housing in response to the pressure in the pressure chamber, the piston defining and enclosing a storage chamber and a passage connecting said storage chamber with said pressure chamber, a control valve mounted in the housing, an operator actuator cooperating with the control valve to communicate pressurized fluid to the pressure chamber, and a valve member carried by the piston within said passage and communicating pressurized fluid from the pressure chamber to the storage chamber via said passage, the improvement wherein said valve member is movable relative to said piston to open fluid communication from said storage chamber to said pressure chamber, a finger member carried by the operator actuator and slidably movable on said piston and pivot piston, said finger member being engageable with said valve member to move the latter relative to said piston, said operator actuator cooperating with said finger member to urge said finger member into engagement with said valve member to control the communication of pressurized fluid from the storage chamber to the pressure chamber.

4,281,586

PNEUMATICALLY OPERATED ADJUSTING DEVICE

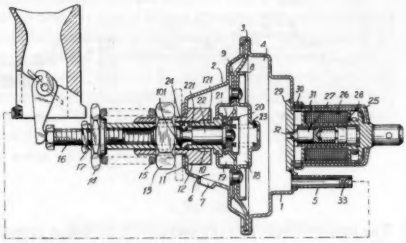
Ernst Kuhlen, Willich, and Gunther Frohberg, Neuss, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 55,293

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830738

Int. Cl.[3] **F01B** *7/20, 19/00;* **F16J** *3/02;* **F15B** *13/044*

U.S. Cl. 91—52 **7 Claims**



1. A pneumatically actuated adjusting device, particularly for throttle flap adjustment on mixture compressing combustion engines, comprising: a housing upper portion and housing lower portion, a diaphragm held between said housing upper portion and said housing lower portion, said diaphragm forming with said housing upper portion a vacuum-charged working chamber, said diaphragm forming with said housing lower portion a chamber open to ambient atmosphere; a guide bushing projecting on an atmosphere-vented side of said diaphragm from said housing lower portion and connected rigidly thereto; two concentric spaced diaphragm plate pairs rigidly connected to said diaphragm, a pipe displaceable in said guide bushing, said pipe being rigidly connected to an outer one of said diaphragm plate pairs, said pipe having a guided portion with at least one recess, a ball arranged in each recess, said guide bushing having an indentation with a diameter corresponding to said ball, said indentation having a depth determining a stroke of a first adjustment stage, a control piston rigidly connected to an inner one of said diaphragm plate pairs and being displaceably arranged in said pipe, said control piston having a piston recess, said pipe performing a lengthened stroke after moving said ball into said piston recess.

4,281,587

HYDRAULIC APPARATUS FOR PRODUCING IMPACTS

Jose T. Garcia-Crespo, Llansa, 45 - 10° 2°, Barcelona, Spain

Filed Apr. 2, 1979, Ser. No. 26,227

Claims priority, application Spain, Mar. 31, 1978, 469,097

Int. Cl.[3] **F01L** *25/04*

U.S. Cl. 91—290 **8 Claims**

2. A hydraulic apparatus of the type known as a hydraulic hammer for generating impacts, said hydraulic apparatus comprising:

a primary housing having a hydraulic cylinder and primary plunger means reciprocatingly and slidably received therein, said hydraulic cylinder having first and second end zones having sealing means, and having different diameters, and said primary plunger means having corresponding diameter first and second end portions slidably received in said first and second end zones, in contact with said sealing means for sealing said end portions, said hydraulic cylinder having an intermediate zone having a third diameter and said primary plunger means having an intermediate portion having a third diameter corresponding to said intermediate zone third diameter;

a first driving chamber defined by a first end face of said intermediate portion and the walls of said intermediate zone and a second return chamber defined by a second

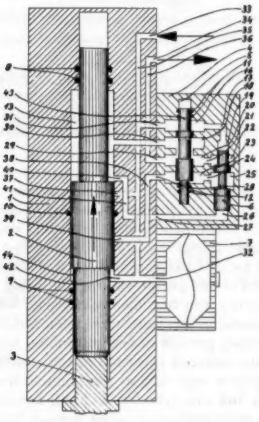
end face of said intermediate portion and the walls of said intermediate zone, said first end face having a greater surface area than said second end face;

secondary housing means having a pressurized fluid supply and fluid outlet connected thereto, and having secondary and tertiary pluralities of chambers and corresponding secondary and tertiary plunger means reciprocatingly slidably received therein for supplying pressurized fluid to said first and second chambers and for allowing pressurized fluid flow from said first chamber for controlling the reciprocating sliding movement of said primary plunger means;

a removable percussion tool positioned at one end of said second end zone for being struck by said second portion of said primary plunger means when said primary plunger means undergoes reciprocating sliding motion;

a hydraulic accumulator means attached to said primary housing for receiving pressurized fluid from said second chamber;

first signal control intake means connected to said pressurized fluid supply and to a first chamber of said secondary plurality of chambers, second signal control intake means



connected to said first chamber of said secondary plurality of chambers and to a first chamber of said tertiary plurality of chambers and a stop port means connected to said intermediate zone and to said pressurized fluid supply, for connecting said pressurized fluid supply, through said first driving chamber, to said fluid outlet for stopping reciprocating sliding movement of said primary plunger means when said removable percussion tool has been removed and said primary plunger means is at a position lower than the lowest position during normal operation;

connecting means for connecting said secondary return chamber with said hydraulic accumulator to said pressurized fluid supply and to a second chamber of said secondary plurality of chambers, said connecting means further connecting said first driving chamber to a third chamber of said secondary plurality of chambers; and

interconnecting means for connecting said primary housing hydraulic cylinder to said secondary plurality of chambers, said primary housing hydraulic cylinder to said tertiary plurality of chambers and said secondary plurality of chambers to said tertiary plurality of chambers for controlling and causing said primary plunger means to undergo reciprocating sliding motion.

4,281,588

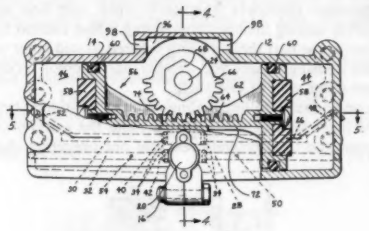
RECIPROCATING PISTON FLUID POWERED MOTOR

Robert F. Jaske, Michigan City, Ind., assignor to Sprague Devices, Inc., Michigan City, Ind.

Filed Jun. 18, 1979, Ser. No. 49,083

Int. Cl.[3] **F01L** *25/04;* **F01B** *9/00;* **F16J** *11/02*

U.S. Cl. 91—290 **8 Claims**



1. An oscillatory fluid powered motor comprising a motor housing formed of two similar cup-shaped parts secured together at their open ends to define an elongated bore therein, said housing parts having complementary passages therein and a fluid outlet, a piston unit having spaced piston heads slidable in said bore and an intermediate reduced dimension section connecting said piston heads, a motor shaft journaled for rotation in said housing between said housing parts, drive transmission means connecting said motor shaft and said piston unit for rotationally driving said motor shaft in response to linear motion of said piston unit, a valve unit having a housing secured to and transverse of said motor housing between said motor housing parts and having an elongated bore transverse of said motor housing bore communicating with a fluid inlet and a valve spool slidable in said valve bore, and valve housing having passages therein controlled by said valve spool and so arranged and communicating with said motor housing passages and with said fluid inlet and said fluid outlet that said piston unit and spool valve are caused to reciprocate in response to fluid pressure supplied at said inlet.

4,281,589

WORKING CYLINDER FOR PNEUMATIC OR HYDRAULIC PRESSURE MEDIA

Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany

Continuation of Ser. No. 826,001, Aug. 19, 1977, abandoned. This application Sep. 6, 1979, Ser. No. 72,864

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1976, 2637803

Int. Cl.[3] **F16J** *15/16*

U.S. Cl. 92—109 **1 Claim**

1. A power cylinder, comprising:

elongated and hollow housing means having a pair of end walls and a uniform inner diameter between said end walls, one of said end walls having an opening therethrough and an axially extending hollow inner part concentric and partially coextensive with said housing means and terminating intermediate said end walls, said hollow inner part being axially aligned with said opening, a substantial first annular space being provided between the inner wall of said housing means and the outer wall of said inner part;

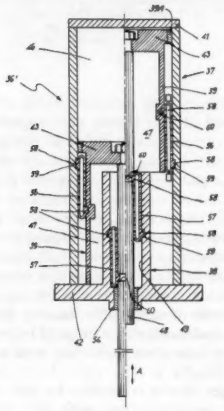
a piston movably supported in said housing means between the other of said end walls and the terminal end of said inner part, said piston dividing the interior of said housing into a pair of operating chambers and having a hollow shell extending axially therefrom and in a spaced relation from said inner wall of said housing means, said hollow shell being movable with said piston into and out of said first annular space, said first annular space constituting one of said operating chambers, the spacing between said

piston and said other end wall constituting the other of said operating chambers;

a piston rod fixedly secured to said piston and extending axially concentric with said shell out through said opening in said one end wall;

a first annular rolling sealing member positioned between the outer wall of said shell on said piston and said inner wall of said housing means to effectively seal said two operating chambers from each other, said first annular rolling sealing member comprising a first endless hollow sleeve, one part thereof being secured to said inner wall of said housing means and another part thereof secured to said outer wall of said shell;

a second annular rolling sealing member positioned between the inner wall of said inner part and the exterior of said piston rod to effectively seal said one operating chamber



to the exterior of said housing means, said second annular rolling sealing member comprising a second endless hollow sleeve, one part thereof being secured to said inner wall of said inner part and another part secured to said piston rod; and

at least a pair of axially spaced low friction and nonpressure-tight bearing means operatively centering said piston in said housing means and said piston rod in said opening through said inner part said first and second annular rolling sealing members being located between said axially spaced bearing means, said pair of low friction bearing means comprising a first bearing member fixedly secured in said opening and slidably engaging said piston rod and a second bearing member fixedly secured to said piston and slidably engaging said inner wall of said housing means.

4,281,590

PISTON CONSTRUCTION FOR RECIPROCATING PUMPS

Joe T. Weaver, 1000 Country Place Dr., #319, Houston, Tex. 77079

Filed Jan. 2, 1979, Ser. No. 424

Int. Cl.³ F16J *9/08*

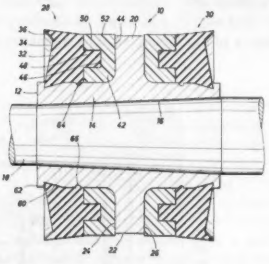
U.S. Cl. 92—244 **13 Claims**

1. A pump piston construction for a reciprocating type pump having a pump cylinder, said pump piston comprising:

a piston hub adapted to be reciprocated within said pump cylinder by a cylinder rod, said hub defining a cylindrical abutment portion of slightly smaller diameter than an unworn cylinder of said pump and forming at least one annular abutment surface, said hub further defining a rim portion of smaller diameter as compared to the diameter of said cylindrical abutment portion;

an annular piston seal ring composed of elastomeric material and being positioned about a portion of said hub, said piston seal ring defining an inner peripheral portion having mating relation with said rim portion and being in intimate assembly with said rim portion, said piston seal ring further defining a tapered outer portion defining an annular sealing lip that is yielded radially inwardly upon insertion into said pump cylinder, said piston seal ring also defining an annular axially projecting intermediate portion extending from a planar portion of said seal ring and defining a plurality of annular bonding surfaces having a combined surface area of greater dimension than the dimension of said abutment surface;

an annular anti-extrusion member being positioned about a portion of said hub and being interposed between and in intimate assembly with said piston seal ring and said abutment surface, said anti-extrusion member having an outer



generally cylindrical yieldable axially extending flange portion formed integrally therewith and being positionable in justaposed relation with said pump cylinder, said yieldable flange portion of said anti-extrusion member being located radially outwardly of said axially projecting portion of said piston seal ring and being yieldable radially outwardly into bearing contact with said pump cylinder responsive to pressure transmission through said axially projecting portion of said piston seal ring and preventing pressure induced extrusion of the elastomeric material of said piston seal ring in the annular space between said piston hub and cylinder, said anti-extrusion member having a multi-surface bonding portion having a configuration mating with said axially projecting portion of said piston seal ring; and

a bonding agent structurally interconnecting said bonding surfaces of said piston seal ring and said multi-surfaced bonding portion of said anti-extrusion member in bonded assembly and structurally interconnecting said piston seal ring and said piston hub.

4,281,591

PRODUCTION OF CIGARETTE FILTER UNITS

Serge Boegli, Zürich, and Jean-Pierre Lebet, Montreux, both of Switzerland, assignors to F. J. Burrus & Cie., Boncourt and Baumgartner Papier SA, Crissier, both of, Switzerland

Filed Mar. 31, 1978, Ser. No. 892,086

Claims priority, application Switzerland, Apr. 4, 1977, 4178/77

Int. Cl.³ B31B *1/00, 27/08;* **A24D** *1/04*

U.S. Cl. 493—45 **13 Claims**

1. In a method of producing a multiplicity of cigarette filter units from a plurality of filter elements with the aid of a porous and continuously supplied covering strip transported in a moving direction, so as to produce a continuous filter strand having a plurality of chamber openings, and with the aid of a filling device and a closing strip,

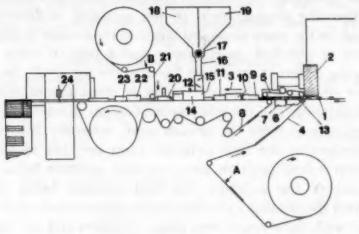
the steps comprising:

applying an adhesive substance to said covering strip along a plurality of approximately equispaced coating tracks,

orienting said coating tracks so that each coating track forms a predetermined angle with said moving direction, and so that said adhesive substance will be applied on at least three locations separated from one another, along a line at right angles to the moving direction of said covering strip,

at least partially wrapping said covering strip around said filter strand,

introducing granular filter material into said openings to form filter chambers,



applying an adhesive substance to said closing strip along a plurality of approximately equispaced closing strip coating tracks,

orienting said closing strip coating tracks so that each closing strip coating track forms a predetermined angle with said moving direction,

adhesively covering said chamber openings with said closing strip, and

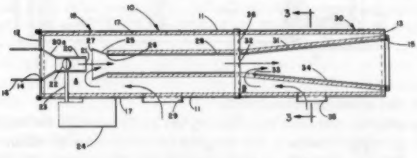
thereafter subdividing said filter strand into said multiplicity of cigarette filter units.

4,281,592

DOUBLE INDUCTION UNIT

Dale E. Maxson, Rockford, Ill., and David Ober, Warren, N.J., assignors to Barber-Colman Company

Filed Aug. 6, 1979, Ser. No. 64,215
Int. Cl.[3] F24F *7/00*
U.S. Cl. 98—38 R **4 Claims**



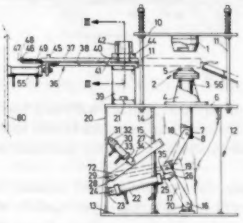
1. An air induction unit comprising: a primary air inlet for receiving a supply of primary air from a supply duct; an outlet for delivering air toward a point of use; a first induction section associated with said primary air inlet, a second induction section, and an air duct connecting said first induction section to said second induction section; said first induction section comprising a first secondary air inlet for delivering secondary air into said unit and a first induction means responsive to the flow of primary air to induce a flow of secondary air into said unit through said first secondary air inlet to form a stream of mixed primary and secondary air for delivery to said second induction section through said connecting duct; said second induction section comprising an expansion unit having a throat connected to said connecting duct and diverging walls downstream from said throat, a second secondary air inlet for delivering secondary air into said unit, and a second induction means effective proximate said throat and responsive to the flow of said mixed air stream to induce a flow of additional secondary air into said unit through said secondary air inlet for mixture with said mixed air stream; and a wall between said first induction section and said second induction section so as to prevent communication within said unit between the respective induced secondary air flows.

4,281,593

DEVICE FOR PREPARING FOOD PRODUCTS FROM COOKED AND EXPANDED CEREALS AND PRODUCTS OBTAINED

Stephan Gevaert, Sint-Martens-Latem, Belgium, assignor to Omer Gevaert, Geraardsbergen, Belgium

Filed Jun. 22, 1979, Ser. No. 51,232
Claims priority, application Belgium, Jun. 22, 1978, 188771
Int. Cl.[3] A47J *27/08*
U.S. Cl. 99—349 **19 Claims**



1. A device for preparing food products from cereals which are pressure cooked and thereafter expanded, comprising

(a) a mould comprised of a hollow heated fixed die and having a cavity defined therein;

(b) a punch entering through an opening of the mould and cooperating with said mould;

(c) a jack connected to the punch to drive the punch alternately between a first position wherein the punch is in the hollow die of the mould, which is closed through the punch, and exerts on the mould a pressure transmitted through the jack during the cooking of the cereals, and a second position wherein the punch is out of the mould which is then open;

(d) stop means for temporarily stopping the movement of the punch, or of a driving member therefor, between the first and the second position, in a third position wherein the punch does not exert a pressure on the mould and the mould cavity is not yet open, to permit expansion of the cereal;

(e) means for automatically feeding cereals to be cooked through said opening of the mould; and

(f) means for automatically discharging the products from expanded cereals through said opening.

4,281,594

BUN SECTION TOASTER

Edward D. Baker, San Francisco, and Nils Lang-Ree, Los Altos, both of Calif., assignors to NPI Corporation, Burlingame, Calif.

Filed Jul. 26, 1979, Ser. No. 61,055
Int. Cl.[3] A47J *37/08*
U.S. Cl. 99—386 **4 Claims**

1. A toaster for a bun center section having substantially planar and parallel upper and lower surfaces, said toaster comprising:

a. a frame;

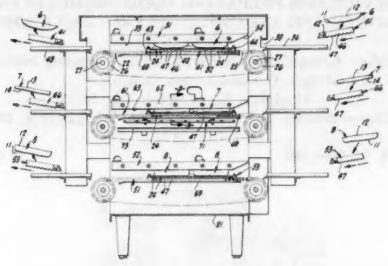
b. a conveyor on said frame;

c. a tray having an aperture therein and adapted to receive the lower surface of a bun center section overlying said aperture;

d. means including said conveyor for advancing said tray across said frame substantially in a horizontal position;

e. a contact heater mounted on said frame, said contact heater including a substantially horizontal planar lower surface vertically spaced above said tray to engage the entire upper surface of said bun center section in firm contact to impart heat to said upper surface of said bun center section as said tray advances across said frame;

f. a radiant heater mounted on said frame in close proximity



below but out of physical contact with said tray to impart heat upwardly through said aperture to said lower surface of said bun center section as said tray advances across said frame; and,

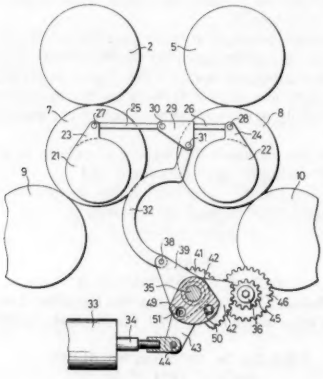
g. regulating means for energizing said contact heater and said radiant heater to toast said upper surface of said bun center section and said lower surface of said bun center section substantially equally.

4,281,595

MULTIPLE-PURPOSE OFFSET ROTARY PRINTING PRESS

Yuji Fujishiro, Tokyo, Japan, assignor to Kabushiki Kaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,222
Claims priority, application Japan, May 26, 1979, 54-065410
Int. Cl.[3] B41F *5/06, 7/12, 13/36*
U.S. Cl. 101—177 **4 Claims**



1. A multiple-purpose offset rotary printing press comprising:

a pair of three cylinder train units juxtaposed in symmetrical arrangement and each consisting of a plate cylinder and an impression cylinder with a blanket cylinder being between and contacting with both of them,

a four cylinder train unit consisting of a pair of blanket cylinders contacting with each other at a position adjacent to both of the impression cylinders of the three cylinder train units and a pair of plate cylinders contacting with the pair of blanket cylinders for cooperating therewith respectively, and

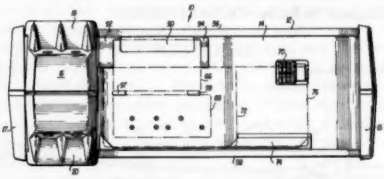
switching means for bodily moving each of the blanket cylinders of the four cylinder train unit through a short radius arc, comprising eccentric sleeves journalling the both axial ends of the blanket cylinders of the four cylinder train unit, a common operative link mechanism connected to the sleeves for rocking them simultaneously, an actuator, an angle increase shifting mechanism provided between said link mechanism and the actuator, said angle increase shifting mechanism comprising a main shaft and a sub shaft, both shafts being mounted on a frame, a driving gear rotatably mounted on the main shaft and adapted to follow the displacement of the actuator, a driven gear fixed on the main shaft and adapted to transmit a displacement to the link mechanism, and a pair of relay gears having different diameters fixed on the sub shaft, the relay gear of smaller diameter being in engagement with the driving gear and the relay gear of larger diameter being in engagement with the driven gear, whereby the blanket cylinders of the four cylinder train unit are moved between a first position and a second position by a single stroke of the actuator, the first position being that in which the blanket cylinders make contact with each other and with their respective plate cylinders and are isolated from their respective impression cylinders of the three cylinder train units, the second position being that in which the blanket cylinders are isolated from each other and make contact with their respective plate cylinders and with their respective impression cylinders of the three cylinder train units.

4,281,596

IMPRINTER AND METHOD OF MAKING SAME

James H. Bowen, Plymouth, Mass., assignor to DBS, Inc., Randolph, Mass.

Filed Feb. 8, 1977, Ser. No. 766,573
Int. Cl.[3] B41F *3/04*
U.S. Cl. 101—269 **1 Claim**



1. An imprinter comprising

a unitary, extruded base having (a) a substantially rectangular upper surface, the lengthwise dimension of which is greater than the width thereof and (b) a pair of edge members extending along the respective, approximate edges of said lengthwise dimension of said upper surface where said edge members form an elongated receptacle extending along said lengthwise dimension of said upper surface;

a molded plastic print bed disposed within and at least partially held in place against vertical movement with respect to the base by said elongated receptacle, said molded plastic print bed integrally including a document holding means for holding a document in place on said print bed;

printing plate holding means for holding a portable printing plate in place on said print bed; and

carriage means containing at least one print roller moveably mounted on said base to effect relative movement of said print roller with respect to said print bed and thereby imprint data from said portable printing plate to said document

and

where said extruded base has an elongated slot extending along said lengthwise dimension of said upper surface, said plastic print bed has openings therethrough, and said printing plate holding means including means disposed in said elongated slot and projecting through said openings in said plastic print bed.

4,281,597

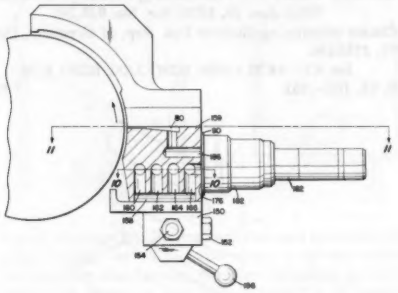
INKING MECHANISM

Friedrich K. Dressler, Pawcatuck, Conn., assignor to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 860,868, Dec. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,581, Apr. 18, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,535

Int. Cl.[3] **B41F** *31/08;* **B41L** *27/10*

U.S. Cl. 101—365 **8 Claims**



1. A mechanism for applying ink to a rotating roll in a printing press, said mechanism comprising an ink rail extending along a length of said roll, a support for said ink rail, said ink rail having a plurality of ink-applying sections spaced axially along the roll, each of said sections extending circumferentially around a part of the roll, a plurality of individual continuous delivery pumps secured to said ink rail, each of said pumps having a respective individual speed controllable drive motor drivingly connected thereto, respective individual pumps being associated with an ink-applying section for providing a controlled, continuous flow of ink to its associated ink-applying section, means defining a fluid passage for delivering ink from each of said pumps to its associated ink-supplying section including an orifice for receiving ink from each of said respective pumps and which is located adjacent the periphery of said roll, the roll ripping the ink out of said orifice as said roll rotates relative thereto, the surface of each of said circumferentially extending ink-applying sections confronting the roll including a longitudinally extending recess and at least two longitudinally extending margins of said recess defining first and second circumferentially spaced gaps with said roll, said recess having a circumferential wall at a slightly greater radial distance from the axis of said rotating roll than said gaps, and into which recess the ink moves after being ripped from said orifice by said roll, and which recess provides a reservoir enabling the ink to cool therein prior to reaching the end of said ink-applying section.

4,281,598

WIDE WIDTH PRINTING PROCESS

Björn S. Rump, Vandoeuvres, Switzerland, assignor to Sublistatic Holding S.A., Glaris, Switzerland

Filed Sep. 29, 1978, Ser. No. 947,292

Claims priority, application Switzerland, Oct. 7, 1977, 12273/77

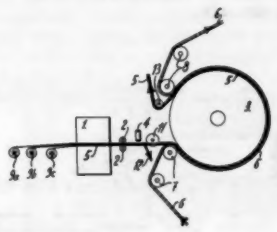
Int. Cl.[3] **D06P** *7/00;* **D06Q** *1/00;* **B41F** *13/02*

U.S. Cl. 101—470 **8 Claims**

1. A wide width transfer printing process for printing with webs of material that undergo linear change upon thermal change wherein

(a) at least two strips of transfer paper webs carrying transferable designs or patterns and register marks are preheated to 90°–150° C. and brought edge to edge,

(b) adjusting the relative positions of these said transfer paper webs by means of the said register marks so that the



designs or patterns coincide on either side of the joint or joints parallel to the strip edges,

(c) introducing the so assembled transfer paper webs into a transfer machine where they are, still in register, brought into contact with the substrate to be printed and

(d) heating the whole to between 160° and 250° C. for a time sufficient to effect the transfer of the said designs or patterns.

4,281,599

PROJECTILE

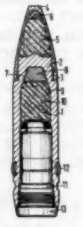
Adolf Weber, Neunkirchen, and Siegfried Rhau, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,134

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824738

Int. Cl.[3] **F42B** *11/14*

U.S. Cl. 102—364 **5 Claims**

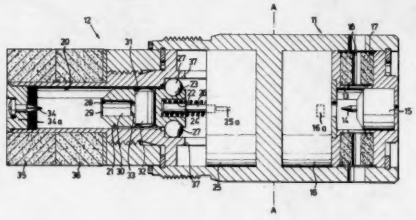


1. An incendiary projectile including a penetrating member (**1**) formed as a hollow projectile having therein an explosive charge (**10**) ignitable through a base detonator (**11**), and a pyrotechnic incendiary composition (**5**) encompassed by a ballistic hood, (**4**), characterized in that the head portion (**2**) of the penetrating projectile is reinforced by a solid pyrometal insert (**8**), and the head portion (**2**) is separable from the rear portion of the penetrating projectile along a predetermined rupturing location (**3**) located intermediate the pyrometal insert (**8**) and the explosive charge (**10**).

4,281,600
SUBPROJECTILE TO BE EXPELLED FROM A PROJECTILE

Claes G. Arnell, Torshälla, Sweden, assignor to Förenade Fabriksverken, Eskilstuna, Sweden

Filed Mar. 2, 1979, Ser. No. 17,071
Claims priority, application Sweden, Mar. 8, 1978, 7802634; Jan. 23, 1979, 7900597
Int. Cl.³ F42B *13/50*
U.S. Cl. 102—489 **5 Claims**

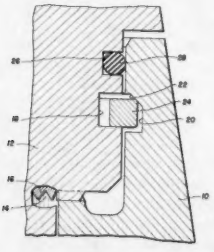


1. A subprojectile to be expelled from a projectile, including a bursting charge, ignition means for igniting the bursting charge, and arming means for preventing in a first and safe position, said igniting of the bursting charge, and allowing, in a second and armed position, said igniting of the bursting charge, wherein the ignition means includes a first ignition body connected to the subprojectile, and a second ignition body which is movable in relation to the first ignition body, the second ignition body being capable of sensing acceleration forces acting upon the subprojectile as a consequence of the expelling of the subprojectile from the projectile, the second ignition body also being capable of sensing deceleration forces acting upon the subprojectile after said expelling, the second ignition body being movable away from the first ignition body in response to said sensing of said acceleration forces, the arming means being shiftable from said safe position to said armed position in response to said moving of the second ignition body, and the second ignition body when subjected to said deceleration forces being capable of moving toward the first ignition body only when the arming means is in said armed position.

4,281,601
NON-SLIP TURNING JOINT FOR FUZES

David L. Overman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 16, 1979, Ser. No. 57,873
Int. Cl.³ F42C *9/00*
U.S. Cl. 102—276 **7 Claims**



1. In a fuze having a first and second member rotatably connected with adjacent annular engaging surfaces perpendicular to the axis of rotation, the improvement comprising:

said engaging surfaces being sufficiently roughened to require relative axial movement of said members to effectuate relative rotation of said members;

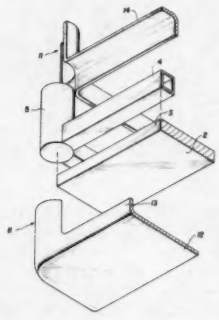
wherein said first member includes an annular recess on its outer surface, said second member includes an annular recess on its inner surface concentric to the annular recess of said first member, said annular recess of said second member has an inclined surface,

biasing means including a split ring spring in both of said annular recesses, said spring and inclined surface cooperating to place said spring under sufficient compression to create an axial force requiring a minimum of forty inch-pounds of torque to rotate said members.

4,281,602
MOLDED OBJECTS SUCH AS TABLES, CHAIRS AND THE LIKE

Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Gebruder Thonet AG, Frankenberg, Fed. Rep. of Germany

Filed Jun. 29, 1978, Ser. No. 920,201
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755336
Int. Cl.³ A47B *13/08;* **B29C** *5/00;* **B25G** *3/34*
U.S. Cl. 108—161 **7 Claims**



1. A molded article suitable for use as a table top or seat for a chair or stool, and the like comprising a support frame and a panel, said support frame being positioned adjacent to and fitting against said panel and having downwardly extending sockets which are to receive ends of legs, said support frame and panel being joined by a plastic material molded about at least edges of said panel and support frame to provide a desired shape and fix said support frame to said panel, said plastic material being polymerized in situ with no significant pressure being exerted and no significant external heat being applied during molding, said plastic material being cured in situ by chemical reaction.

4,281,603
MEANS FOR FEEDING SOLID COMBUSTIBLE WASTE MATERIAL TO A FURNACE

Josef Probsteder, Bachanger 14, 8399 Ruhstorf, Fed. Rep. of Germany

Filed May 16, 1979, Ser. No. 39,453
Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821767
Int. Cl.³ F23B *7/00*
U.S. Cl. 110—196 **5 Claims**

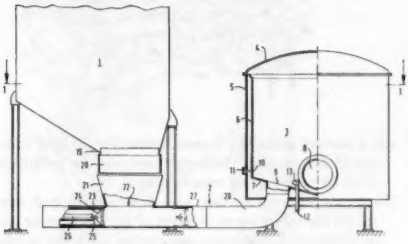
1. An apparatus for burning combustible waste material comprising

means for storing waste material to be burned comprising an upright elongated housing having a closed top and a bottom closure member which slopes downwardly from the housing, said housing, closed top and bottom closure member combining to substantially enclose a space for

storage of waste material, an opening in said bottom member disposed at the lowest point of said sloping bottom member, a discharge pipe communicating with said opening and extending downwardly therefrom for flow of waste material from the said storage space,

a furnace for burning said waste material comprising an upright substantially cylindrical housing and top and bottom closure members fixed to the ends of said housing, an upright wall spaced radially inwardly from the housing substantially concentric therewith and extending across the space and integral with said cylindrical housing adjacent to the top closure member, a bottom wall integral with the upright wall, spaced above said bottom closure member and sloping downwardly from said wall towards a point adjacent to the bottom closure member, an opening in said sloping wall, conduit means extending upwardly through said bottom wall into said space for delivering primary air to the said space, a tubular member enclosing an after-burning chamber extending across said space and having a wall with a plurality of openings therein for flow of gases from the said space into the after-burning chamber which face away from the opening in the said bottom wall, means for supplying air to the said chamber,

a conduit communicating with said discharge pipe and with said opening in said sloping bottom wall of the furnace, and means for moving waste material through the conduit from the discharge pipe through said opening into the space enclosed by said housing, top closure member and sloping bottom wall, said means for moving the waste material closing said conduit against flow of air from the conduit into said furnace.



4,281,604

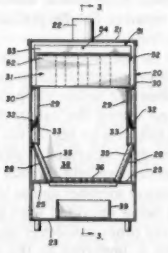
DOMESTIC BOILER

Arthur G. Wigdahl, West Salem, Wis.

Continuation-in-part of Ser. No. 964,432, Nov. 28, 1978. This application Feb. 5, 1980, Ser. No. 118,846

Int. Cl.³ F23B 7/00

U.S. Cl. 110—234 **9 Claims**



1. A boiler comprising a shell having side walls and a rear opening, a grate support in the shell at an elevation below said rear opening, a grate resting on the grate support and having side edges, inclined fire bricks arranged near opposite sides of the shell and within the shell and extending above the grate support and grate and having lower edges resting on the grate support and being captively engaged by the side edges of the grate, a pair of internal side protectors for the boiler above the fire bricks and within the shell and having lower edges which lap top edges of the fire bricks to retain them in place, camming hanger means for the side protectors on the shell and side protectors and supporting the side protectors in the shell and causing their lower edges lapping the fire bricks to maintain retaining pressure on the fire bricks, and top flanges on the side protectors forming supporting guideways for a front-to-back sliding boiler module engaged within said rear opening of said shell.

4,281,605

APPARATUS FOR REGENERATING FLUIDIZING MEDIUM

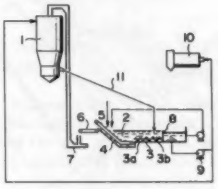
Toshio Uemura; Hiroshi Kagabu; Kenji Arisaki; Noboru Kajimoto; Shinshi Akatsuka, and Takuaki Fujimoto, all of Hiroshima, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,243

Claims priority, application Japan, Sep. 11, 1978, 53-110710

Int. Cl.³ F23J 1/00

U.S. Cl. 110—245 **7 Claims**



1. An apparatus for regenerating fluidizing medium by removing sticking matter attached thereto comprising a stirring device for giving mechanical blows to a medium to be regenerated and a device for feeding out the regenerated medium provided in a first liquid tank; a means for supplying a mixture of a liquid having the sticking matter dissolved therein and insoluble fine particles from the first liquid tank and for separating therefrom the insoluble fine particles as slurry provided in a second liquid tank adjoining said first liquid tank; and a device for supplying the regenerated medium fed out from said first liquid tank to a fluidized-bed furnace.

4,281,606

SEWING MACHINE

Alfons Beisler, Goldbach, Fed. Rep. of Germany, assignor to Beisler GmbH, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,369

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1976, 2656720

Int. Cl.² D05B 21/00

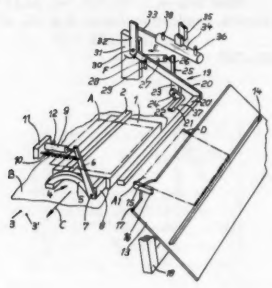
U.S. Cl. 112—121.15 **2 Claims**

1. In the feeding and clamping of a flap in a sewing machine having receiving and sewing stations and a bank of sewing needles, a pivotal mechanism mounted on the machine for achieving, during the sewing-on of a first flap to a garment part, a correct preliminary aligning of a second flap at the receiving station and a control of the clamping of the second flap followed by the mechanical transferring of the second flap from the receiving station to the sewing station for the next following sewing-on procedure comprising in combination:

a materials clamp **1**,

a flap clamp **2** cooperating with the material clamp,

the material and flap clamps being shiftable in unison toward and away from the sewing needles,
a guide block **8** secured to the material clamp **1**,
an angle lever **4** having a pair of arms **5** and **6** and being mounted on the guide block **8**,
the flap clamp **2** being hinged to the guide block **8** through the angle lever **4**,
a retaining support **11**,
a hydraulic cylinder **9** and cooperating piston mounted on the retaining support **11** for opening the flap clamp **2**,
spring means **10** for closing the flap clamp **2**,
an inclined plate **13** at the receiving station and fixedly mounted on the sewing machine for the aligning support of the flap in a hand-over position,
a stop ledge **14** mounted on the inclined plate for ensuring the free overlap of the flap,
a stop toggle **16** swingably mounted on the inclined plate **13**,
an openable jaw for transferring the flap from the inclined plate **13** onto the top of the material clamp **1** and under the flap clamp **2** and including:
(a) a carrier **31** fixed to the sewing machine,
(b) an arm **20** swingably mounted on the carrier,
(c) a beam **20'** secured to the arm **20**,



(d) an arm **22**,
(e) a counter beam **21** secured to the arm **22**,
(f) a beam-mounted arm **23** pivotally supporting the counter-beam **21**,
(g) a one-armed actuatable lever **25**,
(h) a hydraulic cylinder **27** connected to the beam-mounted arm **23** and having a piston rod **26** connected to the actuatable lever **25**,
the beam-mounted arm **23** forming part of the angle lever **4** hinged to the carrier,
the angle lever **4** being arranged for the swinging of the clamps between the receiving and transfer positions,
with the beam and counter-beam being disposed above the upper edge of the inclined plate in the take-over position so that with the jaw opened a flap lying aligned on the inclined plate projects into the jaw and with the beam and counter-beam travelling on the way from the receiving to the transfer position,
through the space underneath the clamp in the open position thereof and, on the way back travelling with the flap closed, and passing through the space above the flap clamp.

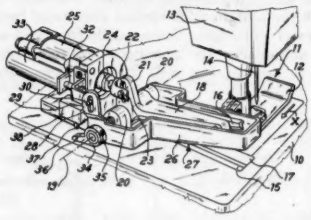
4,281,607

CUTTING APPARATUS FOR SEWING MACHINES

Giancarlo D. Torre, Biassono, Italy, assignor to Rockwell-Rimoldi S.p.A., Milan, Italy

Filed Aug. 6, 1980, Ser. No. 175,792
Claims priority, application Italy, Sep. 20, 1979, 25837 A/79
Int. Cl.³ D05B *37/04, 65/00, 83/00*
U.S. Cl. 112—130 **11 Claims**

1. A cutting apparatus for sewing machines having a sewing zone including a presser foot and cooperating needle and a work surface on which workpieces are advanced to and beyond the sewing zone, said cutting apparatus comprising:
(a) a cutting member supported on the machine downstream of the sewing zone;
(b) a first actuating means for moving said cutting member between a raised position and one of operative association with the workpieces being advanced on the work surface;
(c) a protective guard mounted on the machine in a manner to substantially surround said cutting member;



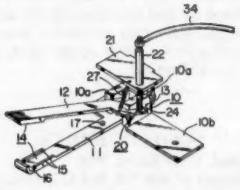
(d) a second actuating means connected to said protective guard for moving the same between the positions travelled by said cutting member; and
(e) means interconnecting said first and second actuating means for initiating movement of said protective guard to its position of operative association with the workpieces prior to movement of said cutting member thereto.

4,281,608

CANTILEVERED BRAKING GUIDE FOR ATTACHING SLIDE FASTENER CHAINS

Hiroshi Mitani, Toulouse, France, and Kenichi Uozumi, Uozu, Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Feb. 16, 1979, Ser. No. 12,792
Claims priority, application Japan, Feb. 20, 1978, 53/18216
Int. Cl.³ D05B *29/00*
U.S. Cl. 112—150 **8 Claims**



1. A braking guide device for controlling the traveling velocity of a slide fastener chain in a sewing machine for sewing the slide fastener chain to an article which comprises:
(a) a supporting member fixedly positioned on the table of the sewing machine,
(b) a presser foot on the sewing machine,
(c) a pair of cantilever members supported by the supporting member and extending before the presser foot of the sewing machine one above the other, the lower cantilever member being fixed on or above the table of the sewing machine and the upper cantilever member being movable in the direction coming into contact with or apart from the lower cantilever member and at least one of the cantilever members being provided with a chain guide on the surface facing the other cantilever member whereby frictional resistance is imparted to the slide fastener chain traveling between the upper and lower cantilever members when the upper cantilever member is at its lowermost position, and
(d) operating means for selectively moving the upper canti-

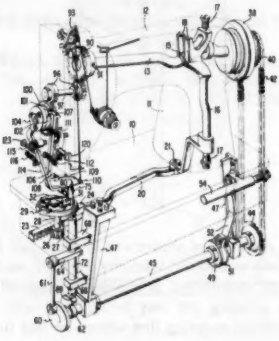
lever member toward or away from the lower cantilever member, wherein the operating means includes a reciprocating rod at the output end thereof which is connected to the upper cantilever member through a spring so that the upper cantilever member is resiliently pushed down toward the lower cantilever member.

4,281,609

LOCKSTITCH SEWING BY NEEDLE LOOPER

Josef Zocher, Aachen, Fed. Rep. of Germany, assignor to The Singer Company, Stamford, Conn.

Division of Ser. No. 33,297, Apr. 15, 1979, Pat. No. 4,245,577.
This application May 2, 1980, Ser. No. 145,907
Int. Cl.³ D05B *57/08, 85/10*
U.S. Cl. 112—184 **1 Claim**



1. A lockstitch sewing machine comprising a frame, said frame including a work supporting surface for supporting a work material thereon, a needle looper assembly, said needle looper assembly including an outer needle having a sharpened tip and an inner needle supported within said outer needle and having a hook on the end thereof, said outer needle and said inner needle being capable of independent movement; an oscillating looptaker, said looptaker having a thread seizing beak thereon; a lower thread carrying bobbin; means for carrying said lower thread carrrying bobbin in said looptaker; means for supporting said needle looper assembly for movement through said looptaker adjacent the thread seizing beak thereof from a position below said loop seizing beak to a position above and through a work material supported on said work supporting surface; means for grasping an upper thread when in said position extending through and above a work material supported on said work supporting surface with said needle looper asembly; means for transporting said upper thread through said work material to a position below said loop seizing beak; and, means for releasing said upper thread to said loop seizing beak for seizure thereby and concatenation with thread on said lower thread carrying bobbin.

4,281,610

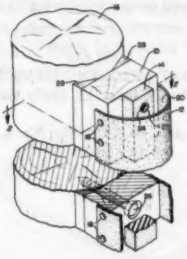
MARINE FENDER AND METHOD OF MAKING THE SAME

Melvin R. Young, 708 Solar Dr., Fort Lauderdale, Fla. 33301

Filed Aug. 8, 1978, Ser. No. 931,890
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—219 **23 Claims**

11. A marine fender adapted to absorb impact loads, comprising a generally rectangular prestressed, resilient sheet of material, such as conveyor belting material, bent from a substantially flat state into a configuration that is smoothly curved in transverse cross section and that is thereby prestressed for absorbing impact loads, the sheet being attached to a support along longitudinal edges so as to define an unpressurized deflection space between the sheet and the support, the material having a woven textile fabric carcass impregnated and coated with an elastomer.

17. A method of making a marine fender adapted to absorb impact loads, comprising providing a substantially flat resilient sheet having a woven textile fabric carcass impregnated with



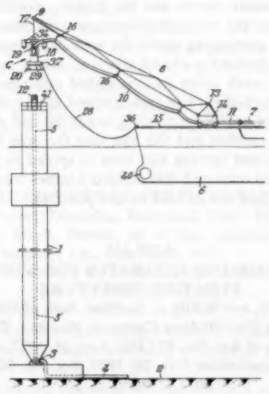
an elastomer, prestressing the substantially flat resilient sheet by bending the sheet into a configuration that is smoothly curved in transverse cross section, and attaching the curved sheet along opposite longitudinal edges to a support so as to provide a deflection space between the prestressed sheet and the support.

4,281,611

SYSTEM FOR MOORING A SHIP, PARTICULARLY AN OIL-TANKER, TO AN OFF-SHORE TOWER OR COLUMN

Robert Vilain, Maisons-Alfort, France, assignor to Enterprise d'Equipment Mecaniques Hydrauliques E.M.H., France

Filed Oct. 11, 1977, Ser. No. 841,024
Claims priority, application France, Oct. 15, 1976, 76 31118
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **7 Claims**



1. A system for mooring a ship or like floating vessel, in particular, an oil tanker, to an off-shore column, and for transferring a fluid cargo such as gas, petroleum oil or the like, by means of at least one articulated arm carried by said vessel, said arm supporting at its upper end a connector device capable of being fixedly placed on a mouth-piece provided on the head of said column, and mooring means for allowing said vessel, once the connector device is fixedly placed, to be moored through said device and to move around the latter so as to be placed in the wind's eye, said connector device comprising a hollow body forming a centering and guiding cone, adapted to be fitted onto a mouth-piece head extending from a conduit pro-

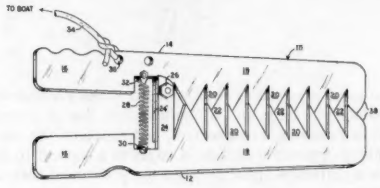
vided on said column, a sliding connector element operable to be inserted into the inlet of said mouth-piece in connecting relationship in conjunction with sealing means, locking means for maintaining the connecting condition of said connector device and said mouth-piece, and means for ensuring, once the connection is completed, the free rotation of said mooring means connecting said connector device to said vessel.

4,281,612

BOAT MOORING DEVICE

Homer A. Watts, Rte. 5, Box 712, Holly Grove Rd., Thomasville, N.C. 27360

Filed Jan. 19, 1979, Ser. No. 4,765
Int. Cl.[3] B63B *21/00*
U.S. Cl. 114—230 **1 Claim**



1. A mooring device to be utilized for mooring boats and like objects to the undergrowth and underbrush in the environment of lakes and ponds, said mooring device comprising a pair of opposed arms extending in spaced parallel arrangement to each other, each of said arms including relatively short lower handle portions and relatively long gripping portions, the gripping portion of each arm comprising a plurality of jagged teeth formed by deep notches, said teeth and notches provided in the opposed edges of said arms substantially throughout the gripping portion, said notches extending into the surfaces of said arms a distance of at least one-half inch, connecting means for joining said pair of arms about a pivot point positioned intermediate the handle portin and the gripping portion, compression spring means extending between said handle portions adjacent said connecting means for normally biasing said gripping portion toward a closed position, when in said closed position said teeth being in overlapped relationship, the extreme upper end of each of said opposed arms being provided with a beveled surface extending inwardly and downwardly for guiding branches and the like into the area between the opposed arms and causing said arms to spread as the mooring device is urged onto said branch, and a tether means connecting said boat and one of said handle portions.

4,281,613

METHOD OF AND APPARATUS FOR MOORING A FLOATING STRUCTURE

Donald R. Ray, and Riddle E. Steddum, both of Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Continuation of Ser. No. 827,145, Aug. 24, 1977, abandoned. This application Nov. 20, 1979, Ser. No. 96,075
Int. Cl.[3] B63B *21/50*
U.S. Cl. 114—230 **16 Claims**

1. A tension mooring system for a floating platform comprising:

a floating platform;

anchor means positioned upon the bed of a body of water;

mooring lines secured to said anchor means and extending upwardly therefrom;

buoyant means connected to the upper ends of said mooring lines at a point below the lowest water surface; and

means for connecting said mooring lines to said floating platform, said connecting means for each of said mooring lines including,

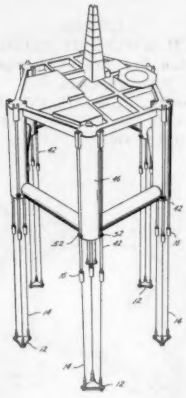
a length of sacrificial mooring line,

a sheave secured to said buoyant means,

a first reel on said floating platform,

a second reel on said floating platform, and

means for tensioning said sacrificial mooring line, said sacrificial mooring line being wound on said first reel and



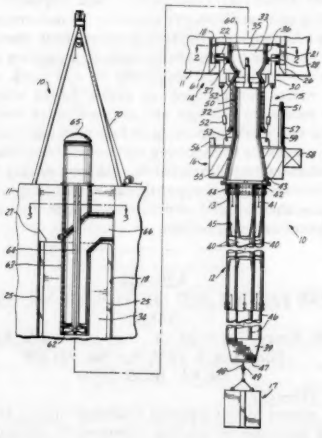
extending around said sheave and through said tensioning means to said second reel whereby tension in said mooring line may be maintained at a preselected level and said sacrificial mooring line may be replaced with the additional sacrificial mooring line wound on said first reel.

4,281,614

CONNECTION OF THE UPPER END OF AN OCEAN UPWELLING PIPE TO A FLOATING STRUCTURE

James F. McNary, Santa Ana, and Abraham Person, Los Alamitos, both of Calif., assignors to Global Marine, Inc., Los Angeles, Calif.

Filed Aug. 21, 1978, Ser. No. 935,591
Int. Cl.[3] B63B *21/52, 51/02;* B63C *9/04*
U.S. Cl. 114—264 **12 Claims**



1. Apparatus for connecting to a floating structure, for pendulous support thereby with its lower end disposed above an ocean floor, the upper end of a pipe assembly disposed substantially vertically in an ocean and the like, the apparatus comprising:

gimbal means coupled between the pipe assembly and the structure concentrically about the pipe assembly and defining two orthogonal gimbal axes about which the pipe assembly can move relative to the structure, the gimbal means carrying essentially all loads between the pipe assembly and the structure, and

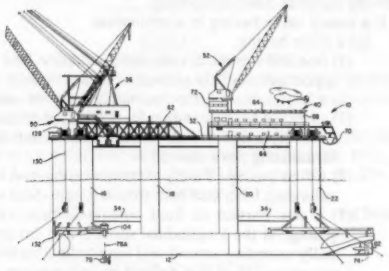
ball joint means coupled between the upper end of the pipe and the structure defining the boundaries of a path of fluid flow between the pipe and the structure, the ball joint means including an element associated with the pipe assembly and a cooperating element associated with the gimbal means and secured from movement relative thereto in a direction aligned with the elongate extent of the pipe assembly, the ball joint means being centered on the intersection of the gimbal axes.

4,281,615

SELF-PROPELLED SEMI-SUBMERSIBLE SERVICE VESSEL

John H. Wilson, Richardson, and Dillard S. Hammett, Dallas, both of Tex., assignors to Sedco, Inc., Dallas, Tex.

Filed Oct. 31, 1977, Ser. No. 845,831
Int. Cl.³ B63B *35/44*
U.S. Cl. 114—265 **14 Claims**



1. A semi-submersible service vessel comprising, in combination:

a service platform having forward, aft, port and starboard sides from which marine service operations may be performed;

first and second elongate hull structures disposed subjacent the service platform, each hull having a ballast tank enclosed therein for controlling the buoyancy of each hull, respectively;

a plurality of buoyant stability columns vertically disposed intermediate each hull and the service deck at forward and aft locations;

a truss system mechanically interconnecting the hulls and service deck for supporting the hulls in spaced parallel relation and for supporting the service deck in a fixed elevated position with respect to the hulls;

means for selectively adding or removing ballast to the ballast tanks of each hull structure;

first propulsion means disposed in the aft region of each hull for producing a driving thrust in a direction parallel with the longitudinal axis of the hull;

second propulsion means disposed in the forward region of each hull for producing a steering thrust, the second propulsion means being mounted for controlled movement relative to an axis of revolution for producing a steering thrust in a direction which may be varied in azimuth;

a plurality of anchor lines reeved for deployment from each corner of the vessel;

a winch assembly connected to each anchor line for maintaining a predetermined level of tension in each line,

a sonar ranging system for measuring the underwater distance between a submerged portion of the service vessel and a submerged portion of an offshore platform; and

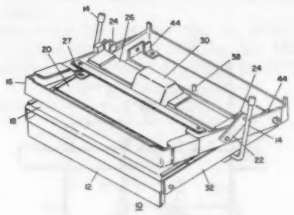
a laser ranging system for measuring the above water distance between the elevated portion of an offshore platform and an elevated portion of the service vessel.

4,281,616

AUTOMATIC FINGERPRINT CARD HOLDER

Allan D. LeVantine, 18225 Rancho St., Tarzana, Calif. 91356

Continuation-in-part of Ser. No. 90,875, Nov. 2, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,655
Int. Cl.³ B41K *1/00*; A61B *5/10*
U.S. Cl. 118—31.5 **16 Claims**



1. An apparatus for holding a fingerprint card that locates the fingerprint card in the proper positions for taking a full set of rolled and flat fingerprints, comprising:

a platen;

a means for locating and retaining a fingerprint card on the platen;

a frame for supporting the platen;

a slide means on the frame that permits the platen to be advanced to carry the fingerprint card to the proper positions;

an actuator means for advancing the platen to the proper positions;

an indexing means for stopping the advance of the platen at the next proper position;

a hoop means for folding the fingerprint card down over the front of the apparatus;

a lever means for actuating the hoop;

a clamping means that frees the fingerprint card as it is advanced to the next position and then folds the card down and locks it at that position;

a restraining means that prevents the apparatus from moving when the fingerprint card is being advanced.

4,281,617

APPARATUS FOR COATING CONDUCTORS

Robert C. Bevers, Doraville; Helmut E. Durr, Dunwoody, and George E. Mock, Duluth, all of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,465
Int. Cl.³ B05C *3/172, 11/02*
U.S. Cl. 118—68 **8 Claims**

1. An apparatus for providing a uniform thickness layer of a fluent coating material to a moving conductor, said apparatus comprising:

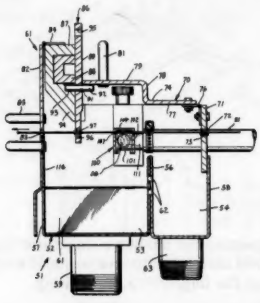
a housing having openings through which a conductor may be advanced along a path into and then out of said housing;

non-contacting means mounted in said housing and having openings aligned with the openings in said housing through which the conductor is moved along a portion of the path for holding the coating material and for maintaining the coating material at a level above the conductor along said portion of its path to cause the coating material to be applied to the conductor as it is moved therethough, said non-contacting means including an applicator tube which comprises:

a container for the fluent coating material, said container

including a pair of spaced side walls, each side wall having a notch formed therein, said notches being aligned with a path of travel of a conductor through the notches such that the conductor is not contacted by the surfaces of the walls which form the notches; and

a cover having a plurality of slots thereacross, each said slot connecting a pair of aligned notches in said side walls and being parallel to a conductor path, each said slot and aligned notches forming an applicator opening which is sized to accommodate a range of conductor sizes and to maintain the level of the coating material in said container



substantially at a predetermined level above the path of the conductor without substantially increasing the flow rate of the coating material into said container;

die means aligned with an exit opening in said non-contacting means for removing excess coating material from the conductor to form a layer of substantially uniform thickness;

means for partially treating the coating material; and

means for advancing the conductor into said housing, through said non-contacting means and said die means and then out of said housing and through said treating means.

4,281,618

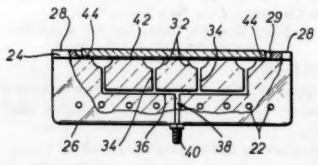
APPARATUS FOR TRANSFERRING SAMPLE ON FLEXIBLE SHEET TO CHROMATOGRAPHIC PLATE

David C. Fenimore, 1300 Moursund, Houston, Tex. 77030

Division of Ser. No. 39,960, May 21, 1979, which is a continuation-in-part of Ser. No. 909,207, May 25, 1978. This application Mar. 20, 1980, Ser. No. 131,896

Int. Cl.³ B05B *1/00*

U.S. Cl. 118—202 **18 Claims**



1. An apparatus for application of samples to a thin-layer chromatograhic plate comprising:

an applicator sheet having a top surface defining a horizontal plane;

means forming a plurality of depressions in said top surface, each of said depressions being adapted to receive a discrete sample to be transferred to said plate; means supporting said sheet and plate in operative association; and

displacement means for moving bottom surfaces of each depression toward said plane to effect said application of samples to the plate.

4,281,619

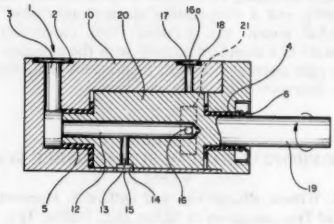
METHOD FOR APPLYING VISCOUS FLUID TO STOCK AND ROTARY VALVE FOR USE IN SAME

Richard H. Frick, and Kenneth M. Enloe, both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 10, 1980, Ser. No. 128,483

Int. Cl.³ B05C *1/04;* B05B *1/16*

U.S. Cl. 118—325 **9 Claims**



1. An apparatus for applying measured amounts of fluid in registry, in a predetermined configuration to a continuously moving material sheet comprising:

I. a rotary valve having in combination:

(a) a rotor having;

(1) first and second circular faces, said first face having a port substantially centrally located therein;

(2) a longitudinal surface extending between said faces;

(3) an intake bore extending from said first circular face inwardly longitudinally toward said second face but terminating prior thereto;

(4) a first passage fluidly communicating and radially extending from said bore to said longitudinal surface;

(5) a slot portion in fluid communication with said passage at the longitudinal surface, and circumferentially extending around said longitudinal surface in an arc greater than that defined by said passage;

(b) a valve seat for rotatably mounting said rotor; said valve seat having:

(1) a fluid inlet fluidly communicating with said bore;

(2) a discharge orifice corresponding to said slot on said valve rotor and in fluid communication therewith when said slot and orifice are aligned as a result of rotation of the valve rotor; and

II. a device for continuously advancing said sheet; and

III. a means for mechanically coupling the advancing of said sheet with the rotation of the valve.

4,281,620

LIQUID DEVELOPER SPEAR HEAD ACCESS MECHANISM

John L. McChesney, Cupertino; Thomas A. Tackland, San Jose, and Ian Turner, Sunnyvale, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1979, Ser. No. 79,676

Int. Cl.³ B05C *3/02;* G03G *15/10*

U.S. Cl. 118—410 **12 Claims**

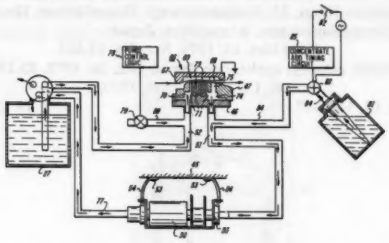
1. A liquid development delivery system in a printing machine, including a removable container of liquid developer material, a development fountain, delivery fluid conduit for transporting developer between said container and said fountain, and suction means for withdrawing developer from said supply container and delivering it in said system, said system being characterized by

a developer access manifold, secured in said printing machine, comprising flow-through piercing means

connection means in said container comprising sealing means through which said piercing means is penetrated and is encircled thereby in a substantially air-tight manner when said container is operatively coupled to said printing machine and wherein said sealing means forms a substan-

tially fluid-tight closure upon removal of said piercing means when said container is uncoupled from said printing machine, and

means, located within said container, through which liquid developer is withdrawn, said withdrawal means being in communication with said connection means and positioned such that said piercing means enters said withdrawal means when said container is coupled to said printing machine.



4,281,621

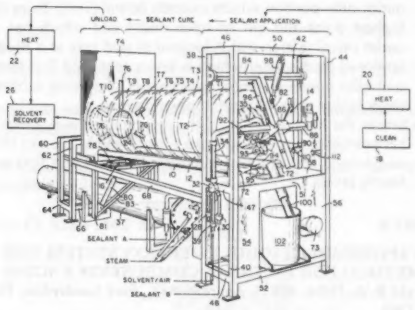
TIRE SEALANT APPLICATOR

Kenneth L. Tacke, Woodinville; Lyle D. Galbraith, and Hudson Stewart, both of Kirkland, all of Wash., assignors to Rockcor, Inc., Redmond, Wash.

Division of Ser. No. 933,579, Aug. 14, 1978, Pat. No. 4,206,008, which is a continuation of Ser. No. 745,194, Nov. 26, 1976, abandoned. This application Dec. 3, 1979, Ser. No. 99,570

Int. Cl.³ B05B *13/06*

U.S. Cl. 118—500 **8 Claims**



1. An apparatus for transporting a plurality of torroidal articles from a loading station to an unloading station while continuously rotating said articles, comprising:

frame means;

at least two generally parallel inclined elongated rollers rotatably mounted to said frame means for supporting a plurality of such articles in generally coaxial side-to-side relation;

drive means for rotating at least one of said rollers;

support means located at said unloading station for supporting one such article located at said unloading station against further displacement along said rollers;

unloading means connected to said frame means and positioned at said unloading station for unloading one such article from said rollers while permitting continuous rotation of remaining articles supported by said rollers; whereby a plurality of said articles are rotated in place until such time as one such article is unloaded from the unloading station permitting the remaining articles to undulate along the rollers to successively occupy the location vacated by the preceding article.

4,281,622

APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

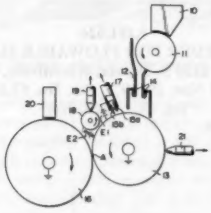
Yoshio Kudo; Masakazu Iwasa, and Hisashi Kato, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Minamiashigara, Japan

Continuation of Ser. No. 886,449, Mar. 14, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 132,976

Claims priority, application Japan, Mar. 14, 1977, 52/27759

Int. Cl.³ G03G *15/08*

U.S. Cl. 118—653 **3 Claims**



1. An apparatus for developing an electrostatic latent image in an electrostatic apparatus comprising a latent image carrying medium carrying thereon an electrostatic latent image, a developing roller which carries thereon a toner layer for developing the latent image into a toner image, a rotatable squeeze roller provided in the vicinity of said developing roller with the periphery of said squeeze roller extending in parallel to the periphery of said developing roller, and means for applying a voltage to said squeeze roller with respect to the developing roller, said voltage applying means being arranged to change the level of the voltage applied to the squeeze roller whereby the thickness of the toner layer is controlled by the level of the voltage applied to said squeeze roller, and means for reducing the thickness of said toner layer on said developing roller before the toner layer faces said squeeze roller to such a thickness that the surface of the toner layer is spaced from the surface of the squeeze roller.

4,281,623

SHEET STRIPPING MEMBERS FOR FIXING DEVICE FOR FIXING IMAGES OF AN ORIGINAL DOCUMENT ON SHEETS OF COPY MATERIALS

Tutomu Kato, Yamatokoriyama, and Susumu Houjyo, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 30, 1978, Ser. No. 891,639

Claims priority, application Japan, Apr. 1, 1977, 52-41182[U]; Apr. 1, 1977, 52-41183[U]

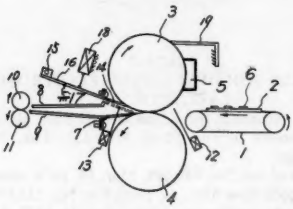
Int. Cl.³ B05C *11/00;* **B30B** *3/04*

U.S. Cl. 118—668 **12 Claims**

1. In a copy sheet stripping device within a copier, said copier including a pair of rollers for fixing images of an original document on a copy material by pressure engagement between said rollers, the improvement comprising:

means for moving the copy sheet stripping device into engagement with one of said pair of rollers to scrape away the copy material from that roller in synchronization with

the approach of the copy material toward the rollers, and for moving the copy sheet stripping device away from



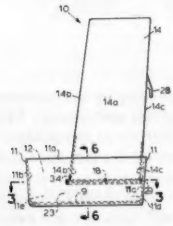
that roller in synchronization with the separation of the copy material from the rollers.

4,281,624

ANIMAL FEEDER FOR FLOWABLE MATERIALS

Raymond Raines, 1320 S. Denver, Russellville, Ark. 72801

Filed Nov. 26, 1979, Ser. No. 97,239
Int. Cl.³ A01K *5/00*
U.S. Cl. 119—52 R **4 Claims**



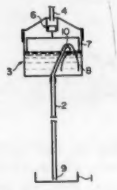
1. In a pet feeder of flowable materials, a horizontally disposed serving container (**11**) provided with a bottom (**9**), front and rear walls (**11***b*, **11***c*) and a pair of substantially vertical oppositely disposed sidewalls (**11***a*, **11***a*), the upper margins of said walls defining an opening (**12**) in the upper end of the container, and an inverted supply container (**14**) provided with front and rear walls (**14***b*, **14***c*) and a pair of substantially vertical oppositely disposed sidewalls (**14***a*, **14***a*) relatively shorter than the sidewalls of said first opening, the lower margins of the inverted container defining an opening (**15**) in its lower end, said oppositely disposed sidewall margins of the inverted container being vertically overlapped respectively by and in laterally spaced relation to said oppositely disposed segments of the serving container sidewall margins to thereby provide a passageway between the container ends, in combination with a pair of tongue-and-groove joints (**18**, **18**) respectively connecting said oppositely disposed sidewall margins of the inverted container (**14**) to said overlapping sidewall segments of the serving container (**11**), said joints slidably supporting the inverted container upon the serving container and for movement along a path extending forwardly and rearwardly of the feeder, the tongue component (**22**) of each of said joints (**18**, **18**) being integral with and projecting laterally from one of said connected overlapping sidewall margins and the associated groove component (**20**) being integral with the other of said connected overlapping sidewall margins and laterally intermeshing with said tongue component (**22**), each of said joints (**18**, **18**) converging rearwardly and laterally inwardly at an acute angle a relative to said path to cause its tongue and groove components to unmesh longitudinally and laterally, progressively in response to forward movement of the supply container, and conversely, to cause the components to intermesh longitudinally and laterally, progressively in response to rearward movement of the supply container.

4,281,625

AUTOMATIC WATER SUPPLY DEVICE

Nobuharu Kasai, 32, Azaipponyanagi, Ooazahinuma, Onoecho, Minamitsugaru-gun, Aomori-ken, Japan

Filed Oct. 12, 1979, Ser. No. 84,432
Claims priority, application Japan, Oct. 24, 1978, 53-130738
Int. Cl.³ A01K *7/00, 39/026*
U.S. Cl. 119—77 **11 Claims**



1. An automatic water supply device comprising:

a tray adapted to receive water up to a predetermined first level;

a first vessel having a float and valve assembly which controls supply of water into said first vessel so as to maintain a predetermined highest second level of water in said first vessel; and

a siphon tube having a highest point, an inlet tube portion which extends downwardly from the highest point and has an open inlet end which has a substantially horizontally disposed annular edge which defines an inlet opening area and is located in said first vessel at a predetermined third level which is lower than said second level, and an outlet tube portion which extends downwardly from the highest point and has an open outlet end which has an outlet opening area and is located in said tray at a predetermined fourth level which is lower than said first level, said inlet opening area of said siphon tube being substantially larger than said outlet opening area;

wherein the highest point of the siphon tube is positioned between said second level and a level which is lower than said second level by the difference between said first and fourth levels.

4,281,626

VAPORIZABLE LIQUID INJECTION SYSTEM AND METHOD FOR INTERNAL COMBUSTION ENGINE

Gerald R. A. Fishe, 404 N. Andrews Ave., Fort Lauderdale, Fla. 33301

Filed Apr. 30, 1979, Ser. No. 34,265
Int. Cl.³ F02M *25/02*
U.S. Cl. 123—25 C **8 Claims**

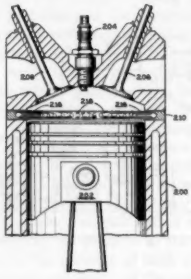
1. In a four or two cycle internal combustion engine having a piston and cylinder forming a combustion chamber with intake, compression, expansion and exhaust phases in its cycle, and means for introducing a combustible fuel-oxidizing agent mixture into said cylinder, means for igniting the fuel-oxidizing agent mixture in said cylinder and means for exhausting gases from said cylinder, the improvement comprising:

means for introducing evaporable liquid into said cylinder in a stratified manner such that the liquid is contacted by a portion of the combusting fuel gases primarily after most of the combustion of the fuel gases has occurred for absorbing some of the heat of combustion in the liquid and vaporizing the same;

said portion of the gases being located at the periphery of the combustion chamber at the time combustion is close to completion and the piston is commencing its power stroke, so as to provide a stratified liner, substantially in

cylindrical shape, against the cylinder walls of the cooler portion of combustion gasses and evaporable liquid to reduce the energy loss to the cylinder cooling system and recoup this energy as vapor to exert pressure on the piston;

said evaporable liquid introduction means including a porous device means for said chamber including a porous portion exposed in said cylinder at a location spaced and



separated from said igniting means, the remainder of said chamber being non-porous, and means communicating with said porous portion for saturating the same with evaporable liquid so that the combustion of the gaseous fuel occurs in said chamber initially at a point separated from said porous portion and proceeds into contact therewith for vaporization of liquid and absorption of heat by liquid vapor.

4,281,627

VENTILATOR OF DISTRIBUTOR FOR IGNITION OF ENGINE

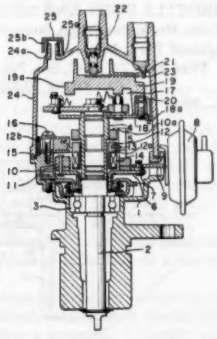
Toshiyuki Sakurai, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1980, Ser. No. 136,825

Claims priority, application Japan, Apr. 3, 1979, 54/454411[U]

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—146.5 A **4 Claims**



1. In a ventilator of a distributor for ignition of an engine which comprises a ventilation plug fitted to a cap of said distributor, an improvement characterized in that said ventilation plug and said cap are formed in one piece by an insert molding.

4,281,628

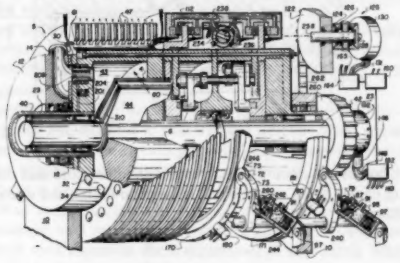
HIGH EFFICIENCY TRI-ROTOR BALLISTIC ENGINE

George J. Doundoulakis, 2498 Kayron La., North Bellmore, Long Island, N.Y. 11710

Filed Oct. 15, 1979, Ser. No. 84,846

Int. Cl.³ F02B *53/00*

U.S. Cl. 123—245 **22 Claims**



1. A tri-rotor ballistic engine comprising:

a frame;

a drum, rotatably mounted on said frame, having an output shaft, a power cavity defined therein;

a power shaft rotatably mounted in said drum;

a reaction shaft rotatably mounted in said drum;

a differential interconnection means interconnecting said power shaft, reaction shaft and drum so that when said drum is rotated at a constant angular velocity and one of said power and reaction shafts is held at zero angular velocity, the other of said power and reaction shafts rotates at twice said constant angular velocity;

at least one inner power piston connected to said power shaft extending radially outwardly thereof and into said power cavity of said drum;

said drum including at least one outer power piston extending into said power cavity to define at least two power chambers with said at least one inner power piston;

first hydraulically operated holding means connected to said power shaft for holding said power shaft at zero angular velocity;

second hydraulically operated holding means connected to said reaction shaft for holding said reaction shaft at zero angular velocity;

control means connected to said first and second holding means for selective activation thereof; and

power fluid means connected to said at least two power chambers for selectively pressurizing said power chambers and rotating said drum.

4,281,629

COMPRESSION IGNITION DIRECT INJECTION INTERNAL COMBUSTION ENGINE

Hans List, 126, Heinrichstrasse, Graz, Austria

Filed Nov. 14, 1979, Ser. No. 94,095

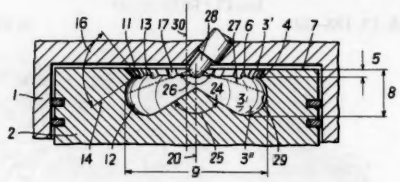
Claims priority, application Austria, Nov. 16, 1978, 8194/78

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—279 **8 Claims**

1. A compression ignition, direct injection internal combustion engine, particularly comprising at least one cylinder, a piston and an injection nozzle, a combustion chamber or cavity in the form of a body of rotation disposed in the piston and receiving almost the entire quantity of combustion air at the end of the compression stroke, wherein said chamber having, below the crown of the piston, a constriction dividing the chamber into an upper and a lower part, said injection nozzle being mounted with the nozzle tip at least near the axis of the chamber and with the fuel jets being directed towards the wall of the chamber, the geometrical points of intersection of the axes of the nozzle holes lying below the narrowest cross-section of the constriction in the chamber throughout the entire

injection period, a connecting passage formed by the constriction between the upper part and the lower part of the combustion chamber including a number of connecting canals in the



region of the circumference of the chamber, and said connecting canals being constructed to be groove-like and open to the chamber.

4,281,630

CENTRIFUGAL RPM GOVERNOR FOR INTERNAL COMBUSTION ENGINES

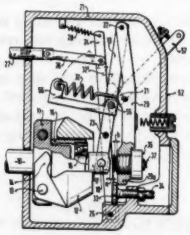
Werner Brühmann; Reinhard Schwartz, both of Stuttgart, and Darsten Hummel, Wendlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 20, 1979, Ser. No. 59,356

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1978, 2838367

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—373 **7 Claims**



1. A centrifugal rpm governor for internal combustion engines comprising, a control member which adjusts in accordance with rpm, at least one governor spring, a force transmitting member subject to the force of said at least one governor spring, an adaptation device disposed in the force transmitting path between said control member and said force transmitting member, said adaptation device having a longitudinal bore recessed to provide a step, a stop bolt having a head and a threaded portion disposed in said longitudinal bore, an adaptation spring in said longitudinal bore, said adaptation spring being supported at one end on said step in said longitudinal bore, an axially displaceable ring having a threaded interior secured to said stop bolt threaded portion adjacent said head and defining a shoulder for supporting the other end of said adaptation spring and means in said longitudinal bore for securing said ring against rotation.

4,281,631

EXHAUST GAS RECIRCULATION AND IDLE SPEED CONTROL DEVICE

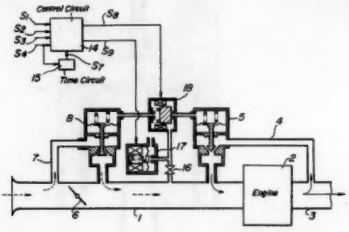
Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 5, 1979, Ser. No. 100,636

Claims priority, application Japan, Dec. 6, 1978, 53-149930; Dec. 8, 1978, 53-151010

Int. Cl.³ F02M *25/06, 3/00*

U.S. Cl. 123—571 **7 Claims**



1. An exhaust gas recirculation and idle speed control device for an internal combustion engine including an exhaust gas recirculation control valve responsive to negative pressure for controlling amounts of exhaust gas recirculation, an idle speed control valve responsive to negative pressure for controlling intake air flow rate when idling, a solenoid valve for regulating intake negative pressure, a change-over valve being changed to supply the negative pressure regulated by the solenoid valve to any one of said exhaust gas recirculation and idle speed control valves and a control circuit for generating signals depending upon engine operating parameters for controlling said solenoid valve and for changing said change-over valve to the idle speed control valve side when a throttle valve is closed and changing said change-over valve to the exhaust gas recirculation control valve side at the time other than when the throttle valve is closed, comprising signal generating means for generating signals for changing said change-over valve from the exhaust gas recirculation control valve side to the idle speed control valve side after a predetermined delay time has lapsed from a moment when the throttle valve was closed and signals for controlling said solenoid valve to fully open said exhaust gas recirculation control valve during said delay time.

4,281,632

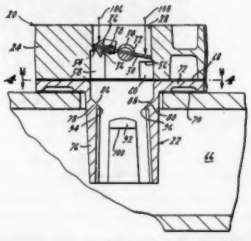
THROTTLE BODY AND MIXING TUBE

Gordon W. Fenn, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Feb. 21, 1979, Ser. No. 13,338

Int. Cl.³ F02M *29/00*

U.S. Cl. 123—590 **4 Claims**



1. In an internal combustion engine having a throttle body comprising an induction port of circular cross section forming

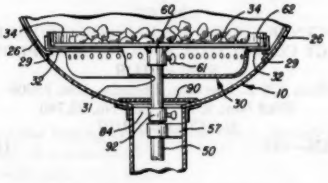
a segment of the induction passage, a throttle shaft extending centrally transversely across the induction port and mounted on the throttle body for rotation about its own axis, a throttle blade of generally circular shape disposed on the throttle shaft which selectively throttles the induction passage in accordance with rotation of the throttle shaft, and means for introducing fuel into the induction passage upstream of the throttle blade to form a combustible mixture with induction air, and a set of deflectors on the wall of the induction passage downstream of the throttle blade, an improved arrangement for the deflectors for imparting increased turbulence to the combustible mixture to improve atomization and distribution of the fuel comprising: each deflector comprising a deflection surface inclining from the induction passage wall radially inwardly in the downstream direction and terminating in a sharp edge which is generally transverse to the direction of flow through the induction passage, said deflectors being arranged in pairs, wherein the deflectors of each pair are diametrically opposite each other across the wall with a first pair of deflectors being disposed circumferentially in alignment with the longitudinal ends of the throttle shaft and with a second pair of deflectors being disposed upstream of the first pair and at an orientation which is circumferentially at 90° relative to the deflectors of the first pair, and wherein the entirety of both sharp edges of the second pair are disposed upstream of the entirety of both sharp edges of the first pair, further including a sharp shearing edge disposed on the induction port of the throttle body generally coextensive with a marginal circumferential segment of the throttle blade which swings upstream as the throttle blade is increasingly opened, said sharp shearing edge being disposed downstream of said throttle blade segment and upstream of the deflectors.

4,281,633

BARBECUE GRILL WITH SNUFFING MEANS AND HEAT CONTROL

Gunther G. Wackerman, Paris, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Jul. 10, 1979, Ser. No. 56,297
Int. Cl.³ A47J *37/00*
U.S. Cl. 126—25 C **15 Claims**



1. An outdoor barbecue grill for cooking meat or other foodstuffs over a bed of hot coals, which comprises:

kettle means for containing the foodstuff to be cooked and the hot coals for cooking the same, said kettle means having draft vent means in its bottom wall, said draft vent means adapted to be selectively put in a closed condition, a partially open condition, and a fully open condition;

cover means for said kettle means;

grill means for holding the foodstuff to be cooked, said grill means being supported by said kettle in the upper interior portion thereof;

generally vertical support means for supporting said kettle in an elevated position, said support means defining a slot, said slot including a generally vertically extending segment and at least one generally horizontally extending segment communicating with said vertical segment, said segments defining a first position at a lowermost predetermined height and a second position at an uppermost predetermined height;

grate means adapted for positioning in the interior of said kettle below said grill means for supporting said bed of hot coals;

a generally vertical post member positioned adjacent said support means, said post member having an upper end that supports said coal grate means, and having lowermost and uppermost positions, respectively, that correspond to said first and second positions defined by said slot segments in said vertical support means;

means slidably supporting said post member in a generally vertical position as aforesaid and permitting vertical movement of said post from its lowermost position to its uppermost position;

generally horizontal handle means, said handle means having one end secured to said vertical post member, a midportion that extends through said slot, and an opposite end that extends away from said support means and is grippable by a user; and

snuffing means actuated by vertical movement of said post member, said snuffing means being adapted to close said draft vent means in the bottom wall of said kettle when said post is in its said lowermost position and to open said draft vent means when said post is raised above said lowermost position;

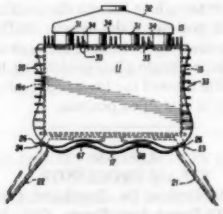
whereby (a) said coal grate means is vertically adjustable relative to said grill means by moving said handle means in said slot segments from said first position at a lowermost height to said second position at an uppermost height, (b) said snuffing means closes said draft vent means when said post member is in its said lowermost position, and (c) said snuffing means puts said draft vent means in its said fully open condition when said post member is in its said uppermost position.

4,281,634

WOOD BURNING SPACE HEATING STOVE

John H. Bane, III, 403 N. Maple Ave., Brunswick, Md. 21716

Filed Oct. 30, 1978, Ser. No. 955,647
Int. Cl.³ F24H *9/14*; F24C *1/00, 15/00*
U.S. Cl. 126—119 **7 Claims**



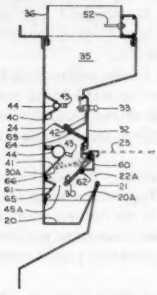
1. A space heating stove comprising a fire box having substantially vertical front and rear panels, a plurality of substantially horizontal flue ducts positioned across the top of the rear panel in spaced relationship to each other and extending outwardly from said rear panel, a manifold spaced outwardly from said rear panel and interconnecting said flue ducts, providing vertically oriented channels formed between adjacent ones of said flue ducts and said manifold and rear panel to generate a substantial convection current of ambient air therein from the space to be heated by said stove.

4,281,635

KITCHEN VENTILATOR WITH INLET THROAT CHOKE ATTACHMENTS

Edson C. Gaylord, Wilsonville, Oreg., assignor to Gaylord Industries, Inc., Wilsonville, Oreg.

Filed Oct. 29, 1979, Ser. No. 89,030
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 D **4 Claims**



1. In a kitchen venilator having a baffle type grease extractor with an elongated inlet throat opening of uniform width extending above a row of cooking units wherein some of said cooking units produce less air pollution than other of said units and wherein said width of said throat opening is determined by the spacing of a damper baffle of uniform width above the front edge of a grease trough which forms the lower boundary of said throat opening, said ventilator having a back wall behind said damper baffle and grease trough and said damper baffle in open position being inclined downward and rearward from the upper boundary of said throat opening toward said back wall beneath a grease extracting baffle of uniform width projecting forward from said back wall, and said ventilator having an upper grease extracting baffle projecting rearward toward said back wall from said front wall above said damper baffle and back wall baffle; the improvement comprising a pair of supplemental and removable throat choke attachments for reducing the air flow over said less polluting cooking units, a first of said supplemental throat choke attachments comprising an elongated L-shaped angle plate extending along the front face of a portion of said damper baffle which is above said less polluting cooking units, said attachment protruding outward from said front face of the damper baffle toward said front edge of said grease trough to reduce the width of said throat opening along said portion of the damper baffle, and the second of said supplemental throat choke attachments comprising an elongated L-shaped angle plate protruding forward below said back wall baffle toward the lower edge of said portion of said damper baffle in said open position.

4,281,636

STEAM PROCESSOR

Elmer S. Vegh, 5290 Graham Dr., Lyndhurst, Ohio 44124; Donald F. Klier, 6511 Forest Ave., Parma, Ohio 44129; Davis S. Schwerzler, 8750 N. Spring Valley, Chagrin Falls, Ohio 44022, and William F. Castle, 1330 W. 67th St., Cleveland, Ohio 44102

Filed Jun. 7, 1979, Ser. No. 46,459
Int. Cl.³ F24D *1/00;* **A21B** *1/08;* **F24H** *1/10;* **A01J** *11/04*
U.S. Cl. 126—369 **8 Claims**

1. A steam processor for use in the preparation of food or the like, comprising:

(a) an enclosed, insulated cooking chamber for heating food items placed in said chamber by contact with steam, having a steam inlet and an outlet for discharging excess steam and condensate;

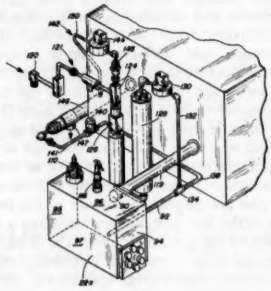
(b) means for providing access to the interior of said cooking chamber;

(c) a source of steam including:

(i) a steam generator including a fluid reservoir;

(ii) conduit means communicating with the steam generator for supplying and draining fluid to and from the reservoir;

(iii) control means including level sensing means and valve means for controlling the fluid communication between the reservoir and a source of fluid, said valve means further comprising means responsive to deactivation of



said steam processor, for draining the contents of said steam generator;

(iv) heating means for vaporizing the fluid in said steam generator;

(v) a steam supply conduit for conveying steam produced in the steam generator to the steam inlet in the cooking chamber;

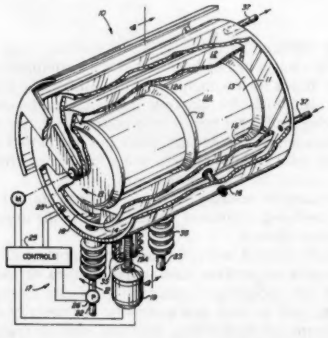
(d) a steam control means for regulating the rate at which steam is produced in the steam generator comprising an operator variable cycling device for intermittently energizing the heating means.

4,281,637

CONCENTRATING VACUUM ISOLATED SOLAR ENERGY COLLECTION APPARATUS EMPLOYING REFLECTOR

Pryce Wilson, 320 E. Sheridan, Phoenix, Ariz. 85004

Filed Nov. 9, 1979, Ser. No. 92,740
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **14 Claims**



1. An improved heat exchange means comprising:

a pair of concentrically arranged inner and outer spaced, closed objects,

said inner object comprising a material to be heated by solar rays impinging on at least a part of its outer periphery,

the space between said objects containing less than atmospheric pressure therein,

said outer object being at least partially transparent for transmitting solar rays to said inner object,

an energy transfer means arranged within the space between said objects for selectively moving into contact with and away from the outer periphery of said inner object,

a control means for selectively controlling the movement of said energy transfer means, and

a cover spacedly positioned and coaxially arranged around said inner and outer objects,

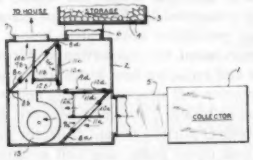
said cover defining between it and the outer periphery of said outer object a fluid conducting space.

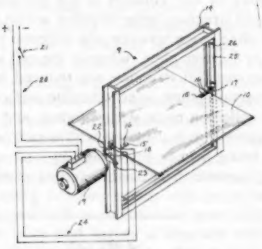
4,281,638

DAMPER FOR SOLAR HEATING SYSTEMS AND THE LIKE

John J. Delany, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Jan. 17, 1979, Ser. No. 4,184
Int. Cl.³ F24J *3/02*; E06B *1/00*
U.S. Cl. 126—428 **17 Claims**





1. In a solar heating system or the like, a damper assembly comprising, in combination:

(a) a rectangular main frame,

(b) a damper blade disposed within said frame,

(c) means mounting said blade to said frame for blade rotation about a pivot axis between open and closed positions,

(d) said blade having opposed side portions extending transverse to said pivot axis, and having opposed end portions extending parallel to said pivot axis,

(e) a plurality of flexible sealing strips mounted on said frame and extending about the periphery of said blade,

(f) said sealing strips being positioned for engagement with the peripheral blade face along the opposed side and end portions of said blade as the latter is rotatably closed,

(g) said sealing strips being inclined toward their respective side and end blade portions and facing against the direction of closing damper blade movement,

(h) a peripheral subframe disposed on the inner portion of said main frame,

(i) means securing said sealing strips to said subframe,

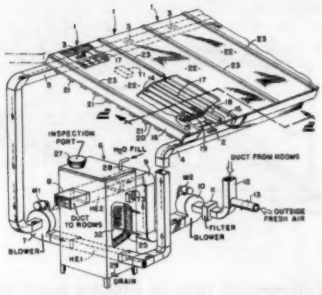
(j) and means mounting said subframe to said main frame for lateral adjustment of said subframe and sealing strips relative to said main frame.

4,281,639

SOLAR HEATING SYSTEM

Seppo K. Kuronen, Ruuvikiya 2, 01650 Vantaa 65, Finland

Filed Jan. 31, 1980, Ser. No. 117,115
Int. Cl.³ I24J *3/02*
U.S. Cl. 126—435 **2 Claims**



1. A solar heating system comprising a hollow solar heat collector including a transparent top wall, a heat insulating bottom wall, and a heat absorber element between said walls to absorb heat from the sun's rays passing through said top wall and to heat air adapted to be circulated through said collector in contact with said element; a heat storage device including an insulated tank filled with liquid heat storage medium, and vertically spaced apart lower and upper heat exchangers having air passages extending through the lower and upper portions of said tank in heat exchange relation with said medium; air ducts intercommunicating said collector and lower heat exchanger in closed loop arrangement; blower means in one of said ducts operative, when energized, to induce flow of hot air from said collector through said lower heat exchanger for transfer of heat to said medium and back through said collector for re-heating of the air; and other air ducts and another blower means to conduct room air to be heated through said upper heat exchanger for transfer of heat stored in said medium to the room air and to conduct the heated room air from said upper heat exchanger to a room space; said lower and upper heat exchangers each comprising a length of metal duct surrounded by said medium and a series of longitudinally spaced banks of open-ended vertical and laterally spaced apart heat-conducting tubes filled with said medium whereby hot air from said collector flowing through said lower heat exchanger transfers heat to said medium around said duct and in said tubes of said lower heat exchanger, and whereby said upper heat exchanger transfers heat from said medium through said duct and vertical tubes of said upper heat exchanger to room air flowing through said upper heat exchanger.

4,281,640

ELECTROMAGNETIC RADIATION COLLECTOR SYSTEM

David N. Wells, 607 Valley Brook Dr., Silver Spring, Md. 20904

Filed Sep. 26, 1977, Ser. No. 836,538
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **39 Claims**

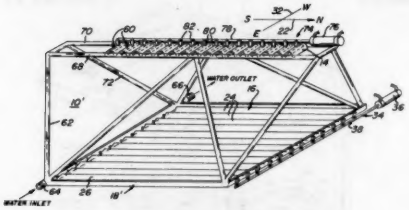
1. An electromagnetic radiation collector system for concentrating and absorbing radiation emitted by a radiation source, comprising:

(a) a frame member;

(b) a primary focusing concentrator having at least a pair of primary reflectors secured to said frame member and having at least a first axis of rotation extending in substantially longitudinal direction passing through an extended length of at least one of said primary reflectors for reflect-

ing and concentrating said radiation emitted by said source;

(c) at least one secondary reflector being positionally located substantially at a focal length of said primary reflectors, said secondary reflector having a focus line extending substantially normal said first axis of rotation of said primary reflectors; and,



(d) electromagnetic radiation collector means mounted to said frame at said focus line of said secondary reflector, said first axis of rotation of said primary reflector extending in a direction substantially normal to an extended direction of said electromagnetic radiation collector means.

4,281,641

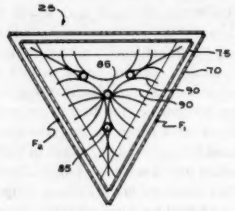
SOLAR ENERGY COLLECTING SYSTEM

Clyde W. Devore, Northampton, Mass., assignor to Heliotropin Engineering Corp., Holyoke, Mass.

Filed Jan. 4, 1979, Ser. No. 902

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **9 Claims**



1. A solar energy collecting system comprising:

(a) a reflective collector having a pair of substantially parabolic sections that are adapted to gather solar radiation and focus said radiation generally along a pair of focal lines;

(b) a heat exchanger having a tube adapted for containment of a heat exchange fluid therein, said tube being triangular in cross section and substantially transmissive to said solar radiation and including a plurality of sidewalls, wherein each of said focal lines is coincident with one of said sidewalls;

(c) a plurality of spaced solar radiation absorbing and thermally conducting fins within the interior of said tube, said fins being adapted to be heated by said solar radiation to conduct heat to said heat exchanging fluid, said fins extending from locations adjacent said tube sidewalls generally normal thereto, pairs of adjacent fins defining gaps which converge to lines of intersection of adjacent fins, and said fins having opposed surfaces between which solar radiation is repeatedly reflected; and

(d) at least one tube within the interior of said heat exchanger, said tube being formed from a heat conducting material, said tube disposed in contact with said lines of fin intersection and adapted to accommodate a flow of a liquid heat exchange fluid therewithin.

4,281,642

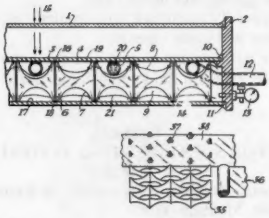
SOLAR COLLECTOR CONSTRUCTION

Hyman A. Steinberg, 7200 NW. 78th St., Tamarac, Fla. 33319

Filed Nov. 5, 1979, Ser. No. 91,156

Int. Cl.³ F24J *3/02;* **F28F** *13/00*

U.S. Cl. 126—447 **2 Claims**



1. In a flat-plate solar collector, including an outer frame defining an opening in which an essentially rigid, flat, black collector plate is disposed within the frame, a conduit for collecting heat connected to the collector plate, and a rigid, non-transparent protective cover plate below the collector plate, the improvement for supporting said cover plate and collector plate and reducing heat losses, comprising:

a rigid, supportive cell structure having cell walls generally perpendicular to and positioned between and in contact with the central portion of said collector plate with conduit and said cover plate, said cell structure defining a plurality of cell volumes in the flat-plate collector, and said cell structure being disposed within at least a partially evacuated space between said collector plate with conduit and said cover plate. wherein the cell wall areas of said supportive cell structure are reduced between cell wall intersection points to accomodate surface irregularities of said collector plate with conduit, and wherein a heat-reflective film is disposed within said cell structure, said film being held in suspension by said cell structure and being isolated from said collector plate and said cover plate.

4,281,643

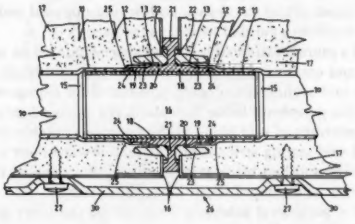
PIPE COUPLINGS

Kenneth H. Kibblewhite, 33 Folkstone Dr., Flaxmere, New Zealand

Filed Nov. 30, 1978, Ser. No. 965,199

Int. Cl.³ F24J *3/02;* **F16L** *21/06*

U.S. Cl. 126—450 **13 Claims**



1. A coupling between pipes which have outwardly stepped ends and are each located in housings, said coupling comprising a tubular member extending axially between said pipes and located by each end in a stepped portion of each respective

pipe, a sleeve located over said tubular member and extending axially between said pipes, said sleeve having the ends thereof engaged in respective pipes between said tubular member and the or a further stepped portion of said pipes and fixing means for retaining the pipe housings in a spaced relationship.

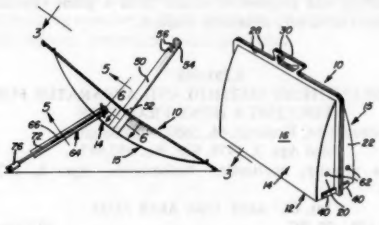
10. A solar heater which includes at least two solar energy absorber panels mounted side by side with the adjacent end of the header or inlet and outlet pipes thereof coupled by a coupling of the type set forth in claim **1**.

4,281,644

SOLAR COOKER

William B. Chiles, Marina del Rey, Calif., assignor to Solar Bar-B-Que Corporation, Los Angeles, Calif.

Filed Jun. 12, 1979, Ser. No. 47,903
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—451 **9 Claims**



1. A collapsible solar cooker including a pair of open sided housing halves including corresponding closed and open sides as well as corresponding sets of peripheral sides extending about major portions of said closed sides and extending toward and bounding corresponding major portions of said open side, pivot means pivotally coupling corresponding peripheral sides of said halves for relative swinging of said halves between closed closely juxtaposed positions opening into each other and open positions opening in generally the same direction, the inner surfaces of said closed sides being contoured to reflect sunlight incident thereon from said direction in a concentrated manner into a zone centrally spaced, in said direction, outwardly of said open sides, a pair of support arms having base ends and free ends, said base ends and said halves adjacent said pivot means including coacting recess and projection means telescopingly engaged with each other for removable support of said base ends from said halves at opposite sides of said cooker along a path closely paralleling the pivot axis of relative swinging of said halves and with said free ends of said arms projecting in said direction, said free ends being disposed in opposite ends of a zone substantially coinciding with the first mentioned zone, and an elongated spit removably supported from and extending between said free ends.

4,281,645

METHOD AND APPARATUS FOR MONITORING METABOLISM IN BODY ORGANS

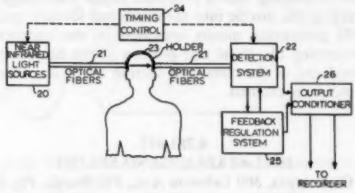
Frans F. Jöbsis, Durham, N.C., assignor to Duke University, Inc., Durham, N.C.

Filed Jun. 28, 1977, Ser. No. 810,777
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—633 **67 Claims**

1. A spectrophotometric method for measuring local metabolism of a body organ such as the brain in situ, in vivo, noninvasively, atraumatically, harmlessly, rapidly and continuously, said method comprising the steps:

(a) with the organ positioned in the body in vivo, selecting an optical path intersecting said organ and extending for several centimeters between points of light entry and exit on the surface of the body;

(b) establishing a plurality of near infrared light sources located external of the body and having light emissions of different wavelength in the 700 to 1300 nanometer spectral range and of an intensity below the level damaging to the body and said organ as positioned in the body in vivo but sufficient to be detectable by a light sensor after transmission along said path, said emissions including at least one measuring wavelength and at least one reference wavelength within said spectral range, each said measuring wavelength being selected such that said organ in vivo exhibits a selective absorption therefor, the extent of which is dependent upon a specific state of metabolic activity of said organ in vivo;



(c) directing said light emissions at said measuring and reference wavelengths sequentially along said path and through said organ and receiving the transmitted light emissions at a light sensor and circuit means to produce an electrical output signal representing the difference in absorption of said measuring and reference wavelengths by the organ as a function of the state of said metabolic activity in vivo; and

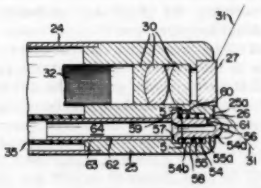
(d) converting said electrical output signal to a signal providing a substantially continuous and rapid measure of said activity.

4,281,646

CLEANING DEVICE FOR AN OBSERVATION WINDOW OF AN ENDOSCOPE

Kunio Kinoshita, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,244
Claims priority, application Japan, Jun. 30, 1978, 53/79460; Dec. 18, 1978, 53/156204
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **16 Claims**



1. An endoscope comprising an elongated sheath having two ends, an operation section having two ends, one end being connected to one end of the sheath, a distal end section having a proximal end connected to the other end of the sheath and a distal end and a nozzle chamber formed in the distal end section, and an observation window provided on the distal end of the distal end section and having an outer surface, a cleaning device comprising:

a hollow cylindrical nozzle reciprocatingly disposed in the nozzle chamber and having a distal end portion adapted to project from the distal end of the distal end section and recede into the distal end section according to reciprocation of the nozzle, said distal end portion having a blind end extending from the distal end of the distal end section;

a nozzle opening formed in the distal end portion of the nozzle directed to the outer surface of the observation window when the nozzle projects from the distal end of the distal end section;

nozzle opening and closing means provided in the distal end section for closing the nozzle opening when the nozzle recedes into the distal end section;

a fluid passage extending through the sheath and having two ends, one end communicating with the nozzle and the other end being disposed in the operation section and connected to fluid supplying means disposed outside the operation section;

nozzle retracting means provided in the endoscope for retracting the nozzle into the distal end section; and

nozzle projecting means provided in the endoscope for projecting the distal end portion of the nozzle from the distal end of the distal end section when the observation window is cleaned.

4,281,647

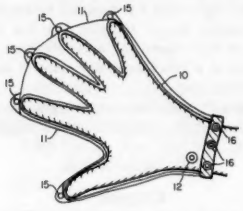
INFLATABLE HAND SPLINT

Philip G. Antypas, 300 Lebanon Ave., Pittsburgh, Pa. 15228

Filed Oct. 12, 1979, Ser. No. 84,372

Int. Cl.[3] A61F *5/10*

U.S. Cl. 128—77 **16 Claims**



1. An inflatable bandage splint for immobilizing the human hand comprising:

an inner glove shaped to generally conform to the human hand,

an outer elastic envelope just larger than the said inner glove,

means for sealing the glove and envelope together at the proximal ends thereof,

means for securing the glove and enclosure together at selected distal locations, and

a plurality of eyelets associated with the outer envelope at at least some of the selected distal locations, and a plurality of eyelets at the proximal end of the inflatable bandage splint whereby tensile members may be strung through the eyelets and tied to provide the desired neutral position of the hand when the bandage splint is inflated.

4,281,648

INFLATABLE CONDOM

M. Maurice Rogers, Rte. 1, Box 214, Downsville, La. 71234

Filed Sep. 24, 1979, Ser. No. 78,443

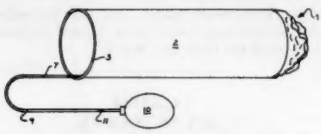
Int. Cl.[3] A61F *5/00, 13/00*

U.S. Cl. 128—79 **4 Claims**

1. An inflatable condom comprising:

(a) an anterior portion characterized by a generally tubular sheath open at one end and having a reinforcing rim adjacent said one end;

(b) a secondary portion integrally formed in said anterior portion to close said anterior portion at the end opposite said one end and characterized by an expandible sheath having a relatively thin wall thickness, a sheath neck communicating between said anterior portion and said expandible sheath and an inner wall closing said sheath neck to seal said expandible sheath from said anterior portion, said sheath neck and said inner wall are thicker than said expandible sheath to facilitate minimum expansion of said sheath neck and said inner wall when said sheath is inflated;



(c) duct means positioned inside said anterior portion and attached to said sheath neck and extending through said inner wall for inflating said expandible sheath; and pump means cooperating with said duct means for selectively inflating said expandible sheath from a point remotely located from said inflatable condom.

4,281,649

OSTEOSYNTHESIS METHOD AND APPARATUS FOR REDUCING A BONE FRACTURE

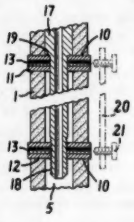
Joan Derweduwen, Kruisven 64, 2400 Mol, Belgium

Filed Apr. 3, 1978, Ser. No. 892,987

Claims priority, application Netherlands, Apr. 1, 1977, 7703616

Int. Cl.[3] A61F *5/04;* **A61B** *17/18*

U.S. Cl. 128—92 BC **19 Claims**



4. Apparatus for reducing a bone fracture which comprises first and second pegs intended to be placed in spaced transverse holes in respective bone fragments and compressioning means intended to be inserted into a passage drilled longitudinally into the broken bone so as to place the pegs under compression, wherein said compressioning means comprises a screw threaded mandrel adapted to be screwed into a tapped bore of one of the pegs while bearing against a second peg by means of a shoulder.

4,281,650

HERMETICALLY SEALED COMPRESS MEDICAL DRESSING

Hans Spiegelberg, Täby, Sweden, assignor to Cederroths AB, Upplands Vasby, Sweden

Filed May 10, 1978, Ser. No. 904,500

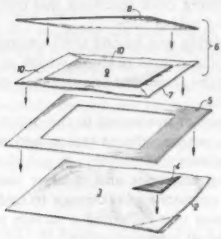
Claims priority, application Sweden, Jul. 11, 1977, 7708031

Int. Cl.[3] A61L *15/00;* **A61F** *7/02*

U.S. Cl. 128—156 **7 Claims**

1. A medical dressing comprising in combination a backing member coated on one side with an adhesive; and a separate substantially flat package comprising a front and a rear foil hermetically sealed about their peripheral edges defining an inner space, and a compress located in said inner space and secured at least to the inner surface of the rear foil, said package being coextensive with said backing member and having the exterior surface of the rear foil adhered directly to said

backing member, at least said rear foil being frangible along a line parallel at least in part to the peripheral edge of said package so as to enable simultaneous removal of a marginal strip of



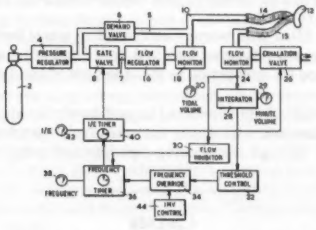
said rear foil and said front foil to expose the coated surface of said backing member beneath the marginal strip and the compress without removal of said compress.

4,281,651

LUNG VENTILATOR

Lawrence A. Cox, Epping, England, assignor to Airco, Inc., Montvale, N.J.

Filed Jul. 30, 1979, Ser. No. 61,971
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.23 **4 Claims**



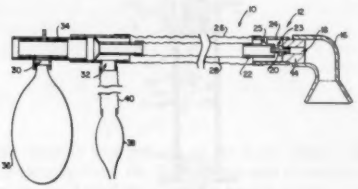
1. An improved lung ventilator for use in weaning a patient from dependence thereupon comprising inlet means for connection to a source of respirable gas, outlet means for supplying respirable gas to a patient, said inlet means and outlet means forming part of an inspiratory flow path for the respiratory gas, valve means for controlling the flow of respiratory gas in the flow path for spontaneous breathing cycles, exhalation conduit means through which pass the gases exhaled by a patient during the exhalation phase of each respiratory cycle, means bypassing said valve means for providing an automatic ventilation cycle for assisted breathing; the improvement comprising means adapted to produce a first signal representing the rate of flow of gas passing through said conduit during each exhalation phase; means adapted to provide a second signal representing the minute volume of exhaled gases through said conduit; and means responsive to said signals for triggering the start of said automatic ventilation cycle when, in any given ventilation phase, the minute volume of exhaled gases is below a chosen threshold and the rate of flow of the exhaled gases has virtually decreased to zero.

4,281,652

CONTROL MEMBER FOR ANAESTHESIA APPARATUS

Donald M. Miller, Moroka Hospital, Private Bag X9, Thaba'nchu, South Africa

Filed Aug. 27, 1979, Ser. No. 69,998
Claims priority, application South Africa, Sep. 7, 1978, 78/5078
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.25 **6 Claims**



1. A fluid flow control device for an anesthesia system, comprising;

(a) tubular connecting means having a proximal end adapted for connection to a patient and a distal end,

(b) a tubular supply member having a distal end adapted for connection to a supply of inhalation fluid and a proximal end, means for securing the proximal end of said tubular supply member in spaced relationship to the distal end of said tubular connecting member,

(c) a tubular outlet member having a proximal end, means connecting the proximal end of said tubular outlet member about said distal end of said tubular connecting means and said proximal end of said tubular supply member such that the space between the proximal end of said tubular supply member and the distal end of the tubular connecting member is in direct free fluid communication with said tubular outlet member, said tubular outlet member having a distal end communicating to atmosphere,

(d) flow ducting means interposed between the distal end of said tubular connecting member and the proximal end of said tubular supply member, permitting flow of inhalation fluid from said tubular supply member to said tubular connecting means, said flow ducting member acting to direct exhalation fluid from said tubular connecting member directly into said tubular supply member and depending upon a predetermined pressure or volume of inhalation fluid in said tubular supply member into the tubular outlet member for venting to atmosphere, and said flow ducting means comprises a jet secured in a fluid tight manner to said tubular connecting means and having an exit end projecting into the proximal end of said tubular supply member and being radially spaced therefrom.

4,281,653

COMBINED AMPULE-ONEWAY INJECTION SYRINGE

Helmut Barta, and Walter Simonich, both of Vienna, Austria, assignors to Immuno Aktiengesellschaft für Chemisch-Medizinische Produkte, Vienna, Austria

Filed Oct. 9, 1979, Ser. No. 82,856
Claims priority, application Austria, Oct. 16, 1978, 7409/78
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 D **4 Claims**

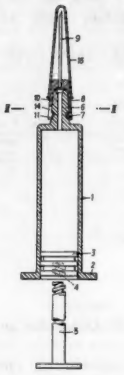
1. A combined ampule-oneway injection syringe comprising in combination

a syringe body made of glass and having a first end and a second end, said first end terminating in a syringe cone provided with a peripheral annular groove, the inner wall of said syringe body being treated with a lubricant,

a needle-carrying connection piece including an inwardly directed nose-shaped part engaging in said peripheral annular groove of said syringe cone by clamping closure, such that said connection piece is undetachably connected

with said syringe cone prior to the filling of the syringe body with medicament,

a piston for permanently closing said second end of said



syringe body after said body has been filled with medicament to be stored for administration, and

a protecting cap located over said needle-carrying connection piece.

4,281,654

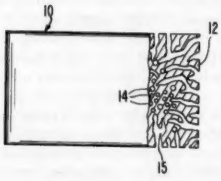
DRUG DELIVERY SYSTEM FOR CONTROLLED OCULAR THERAPY

John W. Shell, Hillsborough, and Robert M. Gale, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Apr. 7, 1980, Ser. No. 138,150

Int. Cl.³ A61M 7/00

U.S. Cl. 128—260 **23 Claims**



1. An ocular therapeutic system for dispensing medications to an eye, said system sized, shaped and adapted for easy insertion and comfortable retention in the eye and comprising depots of 1 to 40 weight percent of a therapeutically acceptable beta-adrenergic solute that lowers intraocular pressure by decreasing aqueous humor formation, and 1 to 40 weight percent of a therapeutically acceptable parasympathomimetic solute that lowers intraocular pressure by increasing the outflow of aqueous humor, said depots dispersed in and surrounded substantially individually by a polymer that is essentially impermeable to the passage of the solutes and is permeable to the passage of an exterior fluid.

4,281,655

AUTOMATIC URINE COLLECTING APPARATUS

Ryugo Terauchi, 4-29-18, Minamiogikubo, Suginami-ku, Tokyo-to, Japan

Filed Sep. 26, 1979, Ser. No. 79,012

Int. Cl.³ A61M 1/00

U.S. Cl. 128—278 **2 Claims**

1. An automatic urine collecting apparatus comprising a tubular urine receiving unit having an inlet at its upper end and an outlet at its lower end;

an annular rubber tube connected to said inlet for contacting a patient's skin;

an apertured fitting cloth receiving said unit and retainingly engaging said rubber tube;

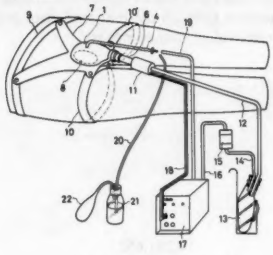
said urine receiving unit having at its intermediate outer top a plurality of apertures through which air enters;

a first flexible tube at one end connected to said unit adjacent said apertures;

an electronic sensor connected to the outlet of said unit for alternatively sensing the existence and non-existence of urine respectively;

a urinal having an upper end; a urine suctioning second plastic tube connecting said sensor to said urinal;

an electric power unit including a suction pump having an intake and an air pressure outlet;



a third plastic tube interconnecting said pump intake with said urinal at its upper end above the level of any liquid therein;

said sensor being electrically connected to said power unit to energize and deenergize said pump in response respectively to the existence and nonexistence of urine in said urine receiving unit;

a bottle filled with warm water; a warm water feeding pipe at one end projected into said bottle and at its other end adapted for connection to the other end of said first plastic tube;

and a rubber bulb connected to said bottle for applying air pressure into said bottle for selectively directing warm water through said feeding pipe into said urine receiving unit.

4,281,656

HULKA-TYPE CLIP APPLICATOR

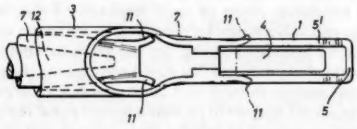
Colin A. Atkins, Englefield Green, England, assignor to Rocket of London Limited, Watford, England

Filed Oct. 15, 1979, Ser. No. 85,046

Claims priority, application United Kingdom, Dec. 8, 1978, 47669/78

Int. Cl.³ A61B 17/12

U.S. Cl. 128—325 **10 Claims**



1. In an applicator for inserting and locking a Hulka-type clip that comprises a pair of pivoted jaws, namely an upper jaw and a lower jaw, and a generally U-shaped spring which fits over the jaws and can be slid forwards from a first, "clip open"

position to a second "clip locked" position, wherein the applicator comprises:

a cradle for holding the lower jaw of the clip;

a detent for preventing the clip falling out of the cradle;

a first ram for riding along the top of the upper jaw of the clip and closing the clip, and

a second ram for engaging the rear end of the spring of the clip and pushing it forward into its locking position once the clip have been closed by the first ram, the improvement wherein the forward end of said first ram is provided with transversely-spaced jaw-engaging surfaces that engage spaced lateral portions of the top of the upper jaw, said first ram being free from engagement with the spring of the clip during the closing and locking of the clip.

4,281,657

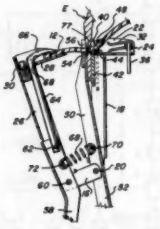
TOOL FOR ATTACHING IDENTIFICATION DEVICE

Eugene B. Ritchey, Rte. 2, Box 58, Brighton, Colo. 80601

Filed Jan. 7, 1980, Ser. No. 109,871

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—330 **15 Claims**



1. A hand tool for attaching a tag to an element to be tagged, wherein the tag is of the type which is made of resilient elastomeric material and includes a laterally extensive base for receiving indicia, an anchoring head in the general plan form of an arrowhead with a narrow leading end or tip and rearwardly diverging locking flanges joined to the base by a narrow neck, said tool comprising:

means for releasably holding the anchoring head of the tag on one side of an element to be tagged;

element piercing means positionable on the opposite side of the element to be tagged;

means for moving said element piercing means through the element to be tagged;

means forming part of said element piercing means for grippingly engaging the tip of the anchoring head after said element piercing means has moved through the element to be tagged;

means moving said element piercing means back to the opposite side of the element to be tagged to pull the anchoring head through the element so hat it is tagged; and

means releasing said tip engaging means after movement of said element piercing means back to said other side of the tagged element.

4,281,658

DILATOR

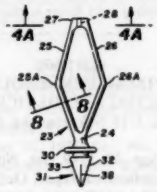
Francis W. Child, Eagle Bend, Minn., assignor to Child Laboratories, Inc., Eagle Bend, Minn.

Filed Jul. 9, 1979, Ser. No. 55,994

Int. Cl.³ A61M *29/00*

U.S. Cl. 128—341 **59 Claims**

1. A dilator for a teat of a female mammal, said teat having a longitudinal duct in communication with a duct outlet in the end of the teat comprising: body means having a passage adapted to be positioned in the duct outlet to allow fluid to flow through the end of the teat, means secured to said body means adapted to be inserted into the duct through the duct outlet in the end of the teat to facilitate flow of fluid in the duct to the passage of the body means, and one-way valve means mounted on said body means for allowing fluid to flow out of the duct through said passage of the body means and discharge the fluid externally of the teat, said valve means having at least a pair of flexible side walls, each side wall surrounding a valve



chamber open to said passage of the body means, said side walls projecting from the body means and extended toward each other, said lips of the side walls having cooperating edges surrounding a normally closed slit mouth to restrict entrance of external foreign substances into the passage of the body means and the duct of said teat.

4,281,659

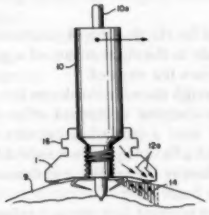
APPLYING AND SECURING PERCUTANEOUS OR TRANSCUTANEOUS PROBES TO THE SKIN ESPECIALLY FOR FETAL MONITORING

Alfred O. Farrar, Cranbury, and Howard M. Hochberg, East Windsor, both of N.J., assignors to Roche Medical Electronics Inc., Cranbury, N.J.

Filed Mar. 12, 1979, Ser. No. 19,550

Int. Cl.³ A61B *5/00, 5/04*

U.S. Cl. 128—635 **16 Claims**



1. A device for detachably securing a bio-medical monitoring means which means comprises an elongated probe, into or through the surface tissue of an organ of an organism, such as the skin, the device comprising a surface base for attachment to the organ, having substantially cylindrically shaped rear and front body portions, with the latter having an operative end from which the operative part of the probe protrudes when in place, said operative end having a front surface, the area of which is substantially greater than the cross-sectional area of the protruding operative part of the probe, said front surface having means shaped for application to organ surfaces which are irregular, curved or deformable and for enabling the organs's surface tissue to be drawn away from the body of the organ when said base is being attached to the organ, said base defining a substantially centrally located passageway through said rear and front body portions and a corresponding aperture in said front surface for receiving the probe, at least the operative end of said front portion of the base having means for minimizing movement of the operative part of the probe due to tilting, torquing or other forces experienced by the probe remotely from the operative part thereof and for distributing such forces over a surface area of the organ which extends beyond the organ surface underlying said front surface, said base having means for securing the probe fixedly yet detach-

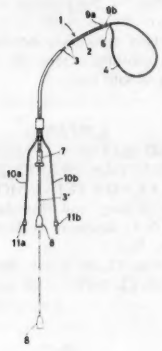
ably in or through the surface tissue of the organ, said securing means including first means mounted on said operative end of said front portion for rotatably attaching the base to the organ surface and second means associated to said passageway for cooperative engagement with the probe, said first and second means providing direct access through said base to the surface of the organ underlying said front surface.

4,281,660

METHOD FOR FIXING PERVENOUS ELECTRODE IN ATRIAL PACING AND DEVICE THEREFOR

Tugumasa Fujiwara, 1-11 Sakuragaoka 4 chome, Kushiro-shi, Hokkaido, Japan

Filed Apr. 20, 1979, Ser. No. 32,234
Claims priority, application Japan, Oct. 18, 1978, 53/127266
Int. Cl.[3] A61B *5/04;* A61N *1/04*
U.S. Cl. 128—642 **3 Claims**



1. A method for the fixation of pacemaker electrodes of an atrial pacemaker in the right atrium of a given patient, which method comprises the steps of:

inserting through the subclavian vein into the right atrium an inspection catheter composed of a slender outer tube having at least a pair of electrodes at the leading end thereof and a flexible guidewire slidably built in the outer tube and having the leading end connected to the leading end of the outer tube;

operating the inserted catheter to explore the endocardium of the right atrium, thereby to determine the optimum position for the fixation of the pacemaker electrodes by measuring the endocardial potential through probing contact by said electrodes of the endocardium of the right atrium;

causing the guidewire, subsequently to the determination of the optimum position, to be pushed into the outer tube to form a loop of a desired size at the leading end of the outer tube inside the right atrium under the state of keeping the leading end portion of the guidewire at the optimum position;

piercing a double lumen needle through the chest wall in the direction of the leading end portion of the outer tube under fluoroscopic observation;

inserting an induction wire serving to guide the pacemaker electrodes into the atrium through the double lumen needle into the interior of the right atrium;

pulling backwardly the guidewire relative to the outer tube to contract the loop for thereby causing the induction wire to be caught fast by the leading end of the inspection catheter;

extracting the inspection catheter from the right atrium and the subclavian vein along with the part of the induction wire caught by the leading end of the inspection catheter;

releasing the inspection catheter from the induction wire;

connecting the induction wire with a sutural thread disposed at the pacemaker electrodes;

causing the rear end of the induction wire protruding from the exposed end of the double lumen needle to be drawn out of the double lumen needle so as to draw the pacemaker electrodes into the interior of the right atrium;

removing the double lumen needle from the chest wall; and

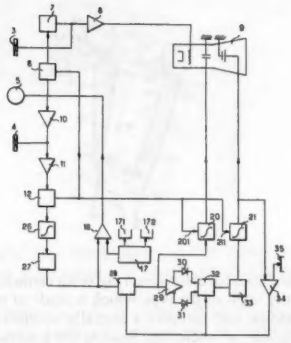
suturing the sutural thread on the subcutanous tissue, thereby to fix the pacemaker electrodes in the right atrium.

4,281,661

MEDICAL ECHO SOUNDING APPARATUS WITH A WIDE SECTOR SCANNING ANGLE

Jacques Dory, Meaux, France, assignor to C. G. R.-Ultrasonic, France

Filed Nov. 1, 1978, Ser. No. 956,707
Claims priority, application France, Nov. 23, 1977, 77-35200
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 **2 Claims**



1. An ultrasonic sector scanner for the examination of a patient's body, said scanner comprising: a housing having a membrane transparent to ultrasonic waves and containing a liquid in which the speed of propagation of ultrasonic waves is substantially lower than the speed of propagation of ultrasonic waves in water; timing means for generating timing signals; transmitter-receiver means in said housing and operative in response to said timing signals, said transmitter-receiver means producing a beam of pulsed ultrasonic wave signals and receiving echoes of said signals reflected from the body under examination; and scanning means periodically sweeping the signal beam angularly across the membrane in synchronism with the said timing signals; said scanner further comprising cathode ray tube display means for displaying a sectional image of the patient's body, said display means including a brightness control electrode, means for controlling the vertical deflexion of the electron beam of the cathode ray tube, and means for controlling the horizontal deflexion of the said electron beam; circuit means connecting the said brightness control electrode to the said transmitter-receiver means for displaying the said echos, angular scanning control means for generating analog signals proportional to the sine of the angle of incidence of the said signal beam on the membrane; switchable multiplier means connected to said angular scanning control means, said switchable multiplier means having a control input and an output, and providing a first voltage, proportional to the speed of propagation of the signal beam within the coupling liquid, multiplied by the said sine, when the said control input is not energized, and a second voltage, proportional to the speed of propagation of the signal beam in the said body, multiplied by the sine of the angle of refraction of the signal beam from the membrane, when the said control input is energized; first integrator means connecting the output of the switchable multiplier means to the

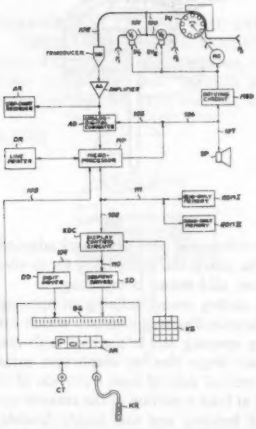
said vertical deflexion control means; means for converting the first voltage into a third voltage proportional to the speed of propagation of the signal beam in the liquid, multiplied by the cosine of the said angle of incidence and for converting the second voltage into a fourth voltage proportional to the speed of propagation of the signal beam in the body, multiplied by the cosine of the said angle of refraction; second integrator means connecting the said voltage converting means to the said horizontal deflexion control means and comparator means, connected to the said second integrator means, providing a control signal energizing the control input of the switchable multiplier means each time the third voltage exceeds a predetermined reference voltage.

4,281,662

OCULAR TESTING DEVICE

Allan Brent, c/o Dynamic Systems Design, 145 Palisade St., Dobbs Ferry, N.Y. 10522

Filed Sep. 5, 1979, Ser. No. 72,624
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—676 **8 Claims**



1. A method of testing a patient for internal carotid occlusive disease, comprising the steps of:

applying negative pressure with a continuously increasing magnitude to a surface of one eye of said patient to monotonically increase the pressure within said eye to the diastolic pressure level and to the systolic pressure level of the retinal artery of said eye;

observing the retinal artery of said eye with an opthalmoscope;

electronically storing, upon detecting pulsation of said artery, a first magnitude related to the negative pressure being applied to said eye upon the pulsation of said artery and, upon detecting a cessation of pulsation of said artery, a second magnetude related to the negative pressure being applied to said eye upon cessation of pulsation;

applying negative pressure with a continuously increasing magnitude to the other eye of said patient to monotonically increase the pressure within said other eye to the diastolic pressure level and to the systolic pressure level of the retinal artery of said other eye;

electronically storing, upon detecting a pulsation of the retinal artery of said other eye, a third magnitude related to the negative pressure being applied to said other eye upon pulsation of the retinal artery thereof and, upon detecting and cessation of pulsation of the retinal artery of said other eye, a fourth magnitude related to the negative pressure being applied to said other eye upon cessation of pulsation of the retinal artery of said other eye;

automatically calculating a percentage difference between said first magnitude and said third magnitude and another percentage difference between said second magnitude and said fourth magnitude; and

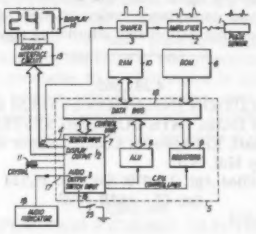
comparing said percentage differences with pre-established limits, whereby an embolism of an internal carotid artery system may be diagnosed.

4,281,663

PHYSICAL FITNESS INDICATOR

Robert D. Pringle, 28a Murrayfield Road, Edinburgh EH12 6ER, Scotland, Scotland

Filed May 21, 1979, Ser. No. 40,908
Claims priority, application United Kingdom, May 26, 1978, 23217/78
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—689 **15 Claims**



1. An electronic physiological performance testing device comprising a portable housing and, in the housing:

means for receiving signals representing instantaneous pulse rates of a subject;

first time period establishing means for establishing a first predetermined period of time between first and second ones of said signals;

second time period establishing means for establishing a second predetermined period of time between the second one and a third one of said signals;

store means connected to the signal receiving means and responsive to said first and second time period establishing means for storing three pulse rates R_1, R_2, and R_3 at instants separated in time by said predetermined time periods where R_1 is the subject's pulse rate at rest, R_2 is the elevated pulse rate resulting from the performance a specified amount of work by the subject, and R_3 is the recovery pulse rate at a specified time after ceasing said performance of the specified amount of work;

computing means connected to receive the three stored pulse rates R_1, R_2 and R_3 and deriving therefrom a performance factor which is a predetermined function thereof; and

display means for displaying the performance factor.

4,281,664

IMPLANTABLE TELEMETRY TRANSMISSION SYSTEM FOR ANALOG AND DIGITAL DATA

Stephen R. Duggan, Rosemount, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed May 14, 1979, Ser. No. 38,805
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—696 **7 Claims**

1. In a telemetry system for transmitting data from at least one location within a living body to an external receiver, a transmitter comprising:

input means for receiving a signal from said location and providing an electrical signal representative of said data;

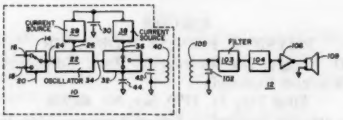
modulator means for receiving said electrical signal and generating an alternating signal having a frequency which

differs from a predetermined nominal frequency by an amount determined by some characteristic of said electrical signal;

antenna means;

current source means;

capacitance means; and



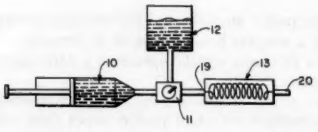
switching means controlled by the alternating signal from said modulator means to connect said capacitance means to said current source means during half of the period of said alternating signal from said modulator means, and to connect said capacitance means to said antenna means during the other half of said alternating signal.

4,281,665

THERMODILUTION INJECTION SYSTEM INCLUDING AN INJECTATE COOLING SYSTEM

Walter A. Gezari, Killingworth, Conn., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Apr. 2, 1979, Ser. No. 25,923
Int. Cl.[3] A61B 5/02
U.S. Cl. 128—713 **9 Claims**



1. In a thermodilution injection system of the type including means for delivering a measured volume of cooled injectate into a patient's circulatory system through a catheter at predetermined time intervals, the improvement comprising:

housing means, said housing means being tubular in shape, said housing means have first and second ends, said first and said second ends being open, said housing means defining a cavity;

non-disposable conduit means, said conduit means being received by and partially filling said housing means cavity, said conduit means having first and second ends, said conduit means defining at least one injectate fluid passageway from said housing means first end to said housing means second end, said conduit means absorbing heat from the injectate, said conduit means having a volume commensurate ate with the measured volume of injectate supplied by the delivering means, said conduit means being sterilizable;

first cap means, said first cap means being received by and sealing said housing means first end, said first cap means being provided with a fluid port, said first cap means fluid port having first and second ends, said first cap means fluid port defining a fluid passageway for the injectate, said first cap means fluid port first end being in fluid communication with and sealed to said conduit means first end, said first cap means fluid port second end being in fluid communication with the delivering means;

second cap means, said second cap means being received by and sealing said housing means second end, said second cap means being provided with a fluid port, said second cap means fluid port having first and second ends, said second cap means fluid port defining a fluid passageway for the injectate, said second cap means fluid port first end being in fluid communication with and sealed to said conduit means second end, said second cap means fluid port second end being in direct fluid communication with and sealed to the catheter; and

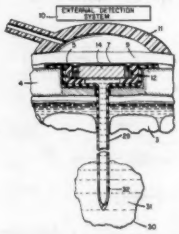
a liquid filling the remainder of said housing means cavity, the temperature of said liquid being capable of being reduced below the desired temperature of the injectate whereby said liquid will absorb heat from said conduit means and thereby cool the injectate to the desired temperature.

4,281,666

SINGLE DIAPHRAGM PRESSURE-BALANCED TELEMETRIC PRESSURE SENSING SYSTEM

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Division of Ser. No. 697,951, Jun. 21, 1976, abandoned. This application Apr. 13, 1978, Ser. No. 895,953
Int. Cl.[3] A61B 5/00
U.S. Cl. 128—748 **40 Claims**



1. An in vivo differential pressure sensor adapted for implantation beneath the skin in the living body for in vivo calibration after implantation, said sensor comprising:

(a) a housing having means defining an opening therein;

(b) a single flexible diaphragm means which extends across the housing opening and is secured with respect to said housing, said single flexible diaphragm means having a first and a second side, at least a portion of said first side comprising at least a portion of the exterior surface of said sensor, said housing and said single flexible diaphragm means being adapted so that, when said sensor is implanted beneath the skin, the exterior surface of said single flexible diaphragm means is positioned to be adjacent to and facing an interior portion of skin whereby said exterior surface portion of said single flexible diaphragm means is in mechanical pressure communication with the skin and whereby pressures external to the body can be communicated mechanically across the skin to said single flexible diaphragm means;

(c) means allowing the second side of said single flexible diaphragm means to be in contact with and in mechanical pressure communication with a bodily medium, the pressure of which is to be sensed when said sensor is implanted in the living body, so that changes in the difference of pressures on said two sides of said single flexible diaphragm means cause a motion of at least a portion of said single flexible diaphragm means

(d) means connected to said housing for contacting the single flexible diaphragm means for a predetermined relationship between the pressures on said single flexible diaphragm means thereby defining a mechanical contact reference position of said single flexible diaphragm means with respect to said housing for a predetermined relationship between the pressures on said single flexible diaphragm means; and,

(e) means having a preselected parameter that is detectable by detection apparatus located outside the living body, said means having a preselected parameter being at least in part cooperatively connected to and movable with said

single flexible diaphragm means so that preselected parameter will change with movement of said single flexible diaphragm means, said parameter being detectable at least when said single flexible diaphram means is substantially at said mechanical contact reference position and said parameter changing upon at least a displacement of at least: (i) a portion of said single flexible diaphragm means from said mechnical contact reference position or (ii) displacements of at least a portion of said single flexible diaphragm means with respect to said housing; whereby when said sensor is implanted beneath the skin said single flexible diaphragm means can be driven to said mechanical contact reference position by a pressure external to the living body applied to the skin adjacent to said sensor and said preselected parameter can be determined at said mechanical contact reference position after implantation and whereby the magnitude of the external pressure applied to the skin that is required to drive said single flexible diaphragm means to said mechanical contact reference position is a function of the pressure in said bodily medium.

4,281,667

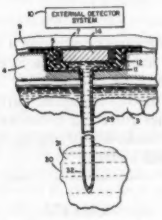
SINGLE DIAPHRAGM TELEMETRIC DIFFERENTIAL PRESSURE SENSING SYSTEM

Eric R. Cosman, 872 Concord Ave., Belmont, Mass.

Division of Ser. No. 697,948, Jun. 21, 1976, abandoned. This application Apr. 13, 1978, Ser. No. 895,954

Int. Cl.[3] A61B *5/00*

U.S. Cl. 128—748 **44 Claims**



1. An in vivo differential pressure sensor adapted for implantation in the living body and for in vivo calibration after implantation, said sensor comprising:

(a) a housing having a means defining an opening therein

(b) a single flexible diaphragm means which extends across the housing opening and is secured with respect to said housing, said single flexible diaphragm means having a first and a second side;

(c) means allowing the first side of the single flexible diaphragm means to be in contact with and in mechanical pressure communication with

a first bodily medium and allowing the second side of said single flexible diaphragm

means to be in contact with and in mechanical pressure communication with a second bodily medium whereby a change in the difference of said pressures in the two bodily media will cause motion of at least a portion of said single flexible diaphragm means with respect to said housing;

(d) means connected to said housing for contacting the single flexible diaphragm means for a predetermined relationship between the pressures on said two sides of said single flexible diaphragm means thereby defining a mechanical contact reference position of said single flexible diaphragm means with respect to said housing for a predetermined relationship between said pressures on said single flexible diaphragm means;

(e) means having a preselected, detectable, variable parameter, the preselected, detectable variable parameter being detectable by detection apparatus located outside the living body, said means having a preselected, detectable variable parameter being at least in part cooperatively connected to and movable with said single flexible diaphragm means so that said preselected, detectable variable parameter will change with movement of said single flexible diaphragm means, such that the value of said preselected, detectable parameter can be detected at said mechanical contact reference position, said single flexible diaphragm means and said means having a preselected, detectable variable parameter being so constructed and cooperatively connected that said parameter value changes as a known function of the displacement with respect to said mechanical contact reference position of said single flexible diaphragm means and said displacement is a known function of the difference in pressures on the opposite sides of said single flexible diaphragm means; whereby when said sensor is implanted in the living body, the single flexible diaphragm means assumes said mechanical contact reference position when the pressure in said second bodily medium exceeds the pressure in said first bodily medium by said predetermining relationship thereby enabling the value of said preselected, detectable, variable parameter to be determined in vivo at said mechanical contact reference position, and whereby the value of said preselected, detectable, variable parameter is a measure of the difference in pressures in said two bodily media.

4,281,668

IMPLANTABLE CARBON ELECTRODE

Gerhard Richter, Erlangen, and Erhard Weidlich, Spardorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,622

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842318

Int. Cl.[3] A61N *1/04*

U.S. Cl. 128—784 **4 Claims**

1. An implantable carbon electrode comprised of an electrically conductive electrode body and an electrode head, said electrode adapted for contact with an insulated lead-in cable, wherein at least the surface of said electrode head comprises a material selected from the group consisting of glass carbon and pyrolytic carbon which has been superficially activated to present a microporous surface, and wherein the surface of said electrode is provided with a smooth coating consisting of a hydrophilic, ion-conducting plastic having at least a surface thereof comprised of a body and/or blood compatible material.

4,281,669

PACEMAKER ELECTRODE WITH POROUS SYSTEM

David C. MacGregor, 81 Wimbleton Rd., Islington, Ontario, Canada

Continuation-in-part of Ser. No. 683,382, May 5, 1976, Pat. No. 4,101,984. This application Aug. 15, 1977, Ser. No. 824,296

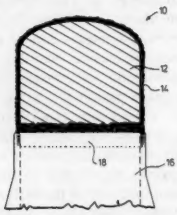
Claims priority, application Canada, May 9, 1975, 226993; United Kingdom, Dec. 22, 1975, 52474/75; Oct. 19, 1976, 43407/76

Int. Cl.[2] A61N *1/04*

U.S. Cl. 128—784 **4 Claims**

1. A pacemaker electrode constructed of a metal inert to blood and consisting of a dense rigid coherent metal substrate and a rigid porous coating adhered to at least a major portion of said substrate, said porous coating including a plurality of metal particles bonded together at their points of contact with each other and with said substrate to form a network of interconnected pores substantially uniformly distributed throughout the coating, said porous coating having a porosity of about 10 to about 50% by volume and a thickness less than about 500 microns, said porous coating and said coating substrate interface having a shear strength greater than about 1000 psi, the composite of said metal coating and substrate having a high

fatigue tolerance, said metal particles having a particle size of about −100 mesh, said electrode having a current-carrying wire connected thereto and a flexible polymeric insulating



sleeve surrounding said wire, said sleeve being connected to a minor portion of said electrode by interlock of the polymeric material of the sleeve in the interconnected pore network of the porous metal coating.

4,281,670

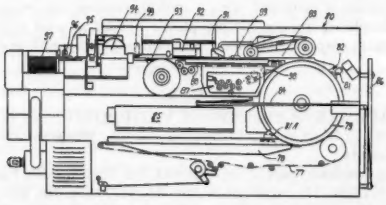
APPARATUS FOR INCREASING THE PERMEABILITY OF WRAPPING MATERIAL FOR ROD-SHAPED SMOKERS PRODUCTS

Uwe Heitmann, Schwarzenbek, Fed. Rep. of Germany; Joachim Buchegger, Richmond, Va., and Werner Hinz, Hamburg, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 805,712, Jun. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 766,927, Feb. 9, 1977, Pat. No. 4,121,595. This application Sep. 19, 1977, Ser. No. 834,645

Int. Cl.³ A24C *5/60*

U.S. Cl. 131—281 **27 Claims**



1. In a machine for the production and/or processing of rod-shaped articles which constitute or form part of smokers' products and wherein a wrapper surrounds a rod-like filler, a combination comprising drive means for moving a succession of wrappers along a predetermined path; at least one source of coherent radiation operable to emit at least one beam of coherent radiation; means for directing said beam against successive wrappers in said path whereby the wrappers are perforated at the points of impingement of said beam, said drive means including conveyor means for moving a succession of articles sideways past said beam directing means; and means for temporarily interrupting the sidewise movement of articles along said path while the articles are in register with said beam directing means and for simultaneously rotating the arrested articles about their respective axes.

4,281,671

PRODUCTION OF TOBACCO SMOKE FILTERS

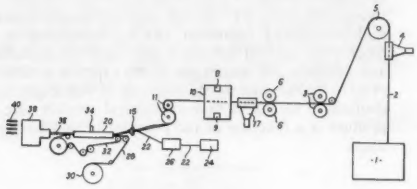
Stanley W. Bynre, North Crawley; Barry J. Tompkins, Stony Stratford, and Ernest B. Hayes, Newcastle-upon-Tyne, all of England, assignors to American Filtrona Corporation, Richmond, Va.

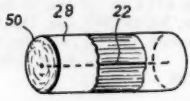
Filed Apr. 19, 1979, Ser. No. 31,475

Claims priority, application United Kingdom, Apr. 21, 1978, 15957/78

Int. Cl.³ A24D *1/04*

U.S. Cl. 131—335 **7 Claims**





1. A tobacco smoke filter comprising a rod of tobacco smoke filtering material, at least one continuous element selected from thread and tape extending continuously longitudinally of said rod, and a smoke modifying agent carried by said element which in use becomes entrained in smoke passing through the filter whereby said smoke-modifying agent is connected in the area of said elongated element.

4,281,672

SMOKING DEVICE

Ricky E. Caraway, 325 Robin Ct., Burleson, Tex. 76028

Filed Dec. 10, 1979, Ser. No. 101,579

Int. Cl.³ A24F *13/16*

U.S. Cl. 131—174 **2 Claims**

1. A smoking device, comprising:

a container having an open end and a closed bottom,

holding means coupled to said container at said open end for holding a cigarette or the like,

said holding means being movable between a first position where a portion of the cigarette held by said holding means is within said container and a second position where the cigarette is outside of said container, and

baffle means located in said container between said open end and said bottom and in contact with a portion of the side wall of said container for allowing ashes to fall to the bottom of said container but preventing ashes between

said bottom and said baffle means from falling out of said container when said container is positioned with its open end downward and with said portion of said side wall in a lower position relative to the opposite side wall portion.

4,281,673

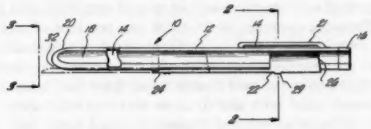
HAIR CURLER

Alvin W. Miller, 323 S. McPherrin, Monterey Park, Calif. 91754

Continuation of Ser. No. 766,840, Dec. 2, 1976, abandoned. This application Dec. 22, 1978, Ser. No. 972,288

Int. Cl.³ A45D *2/02*

U.S. Cl. 132—39 **7 Claims**



1. A hair curler for use with a bobby pin in forming a tress of hair into a curl, said curler comprising an elongated body member defining a convex arcuate support surface, and a clip member having a forwardly extending arcuate end portion defining an inner concave gripping surface and an outer convex roller surface and being slidably mounted over and along said arcuate support surface of said body member, the end of said body member and said extending end portion of said clip cooperating to receive the entry of a portion of a tress of hair therebetween and between said convex arcuate surface of said body member and said inner gripping surface of said clip such that said tress can be held therebetween and said curler can be moved along said tress to bring said tress to even alignment for rolling into a uniform curl, said body member further defining at least one longitudinally extending flute in the exterior surface thereof adapted to receive the leg of a bobby pin such that upon rolling said tress about said outer rolling surface of said clip, said pin can be disposed about said tress with one leg thereof disposed within said flute and said clip can be slidably moved along said body member rearwardly of said tress releasing said tress from said curler and leaving said tress in a curled disposition secured by said bobby pin.

4,281,674

APPARATUS FOR CLEANING ENDOSCOPE

Masahiro Tanaka, Tokyo, and Katunaga Konoshima, Hachioji, both of Japan, assignors to Olympus Optical Company, Ltd., Japan

Filed Aug. 29, 1979, Ser. No. 70,622

Claims priority, application Japan, Nov. 27, 1978, 53/146301

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—95 **7 Claims**

1. An apparatus for cleaning an endoscope, comprising:

rinse basin means adapted to receive a portion of an endoscope to be cleaned, said rinse basin means including a first spray head means for spraying a cleaning liquid and a second spray head means for spraying a liquid sterilizer;

drain means formed in said rinse basin means;

a first feed pump for supplying said cleaning liquid to said first spray head means;

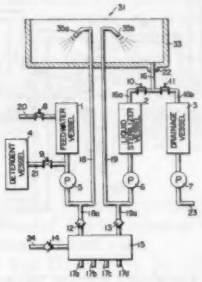
a second feed pump for supplying said liquid sterilizer to said second spray head means from a vessel containing a quantity of said liquid sterilizer;

a drain tube means connected with said drain means and having first and second branches;

a return tube means connected with said first branch and communicating with said vessel via a first electromagnetic valve which is operable when a return of said liquid sterilizer to said vessel is desired;

second drain tube means connected with said second branch and including a second electromagnetic valve which is operable when drainage of a liquid from said rinse basin means is desired; and

header means cooperating with said first and second feed pumps to feed at least one of the group of water, liquid detergent and liquid sterilizer into individual channels of an endoscope located in said rinse basin means so that such fluid passes through the endoscope, is discharged into said rinse basin means and is recirculated through said apparatus via said drain means.



4,281,675

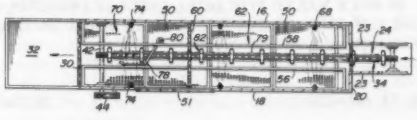
APPARATUS FOR WASHING INSULATED TRAYS

Albert Pure, Philadelphia, Pa., assignor to Insinger Machine Company, Philadelphia, Pa.

Filed Sep. 13, 1979, Ser. No. 75,379

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—125 **9 Claims**



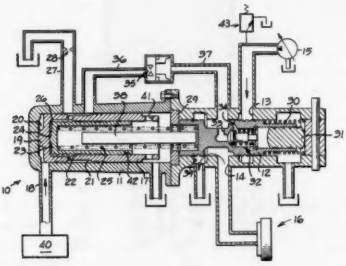
1. Apparatus for washing insulated trays having pockets on a major face thereof comprising a housing having an inlet and an outlet, the width of the inlet being substantially narrower than the height thereof so that the trays to be washed will be vertically disposed and supported by a side face, first and second guide rails in said housing for guiding upright trays as they are being washed in said housing, said rails being spaced apart slightly greater than the thickness of the trays so that the trays will tilt slightly from the vertical while being washed, an endless conveyor below the elevation of said guide rails for moving trays from said inlet through said housing to said outlet, motor means for driving said conveyor, said conveyor having trays supports at spaced points there along so that each trays side face is suported by two adjacent tray supports, said tray supports being generally V-shaped when viewed in the direction of travel, and nozzle means on opposite sides of vertical planes containing the longitudinal axes of the rails for spraying water generally horizontally at the opposite major faces of the trays.

4,281,676

PRESSURE MODULATING SELECTOR VALVE

Hugh C. Morris, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 8, 1978, Ser. No. 884,675
Int. Cl.³ F16K *31/143*
U.S. Cl. 137—102 **16 Claims**



1. A pressure modulating selector valve having an inlet, an outlet and a drain and comprising

first means within said valve for movement in a first direction between a closed position blocking communication of fluid from said inlet to said outlet to an open position communicating fluid from said inlet to said outlet, said first means providing communication between said outlet and drain in the closed position and preventing communication between said outlet and drain in an open position,

second means responsive to a fluid pressure pilot control signal for movement in said first direction towards said first means to a limit stop position,

third means responsive to movement of said second means in said first direction for moving said first means to its open position through an interposed means to communicate said inlet with said outlet and closing said drain, and

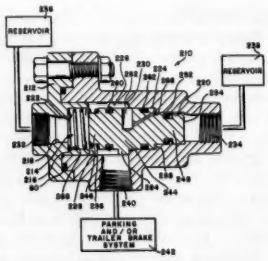
modulating means interconnected between said outlet and said third means for controlling gradual further movement of said first means through its open position in response to movement of said third means to modulate the increase of fluid pressure in said outlet to a predetermined level.

4,281,677

SUPPLY VALVE FOR DUAL CIRCUIT SYSTEMS

David A. Hoffman, Olmsted Falls, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 16, 1979, Ser. No. 94,847
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—113 **10 Claims**



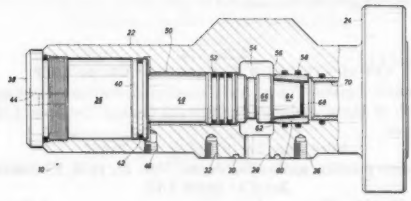
1. In a supply valve, a housing defining a bore therewithin, said housing having an outlet and a pair of inlets communicating with said bore, a shuttle slidable in said bore in response to a pressure differential between said inlets to communicate one of said inlets to said outlet and close the other inlet when the pressure level at said one inlet is greater than the pressure level at the other inlet and sliding to close said one inlet and communicate said other inlet to said outlet when the pressure differential between said inlets reaches a predetermined level, said shuttle including a pair of fluid pressure responsive areas corresponding to each of said inlets, at least one of said pair of areas including one portion communicated to its corresponding inlet and an other portion communicated to the outlet when the corresponding inlet is closed, said other portion being communicated to said corresponding inlet when said corresponding inlet is communicated to said outlet, and orifice means for providing uninterrupted communication between said outlet and said other portion of said areas, said pressure differential operating on said one portion of one of said areas to initiate movement of said shuttle away from said one inlet, said pressure differential operating on both of said portions of said one area to complete the movement of said shuttle, to open said one inlet and to close said other inlet, said valve including resilient means biased to move said shuttle away from said other inlet, to open said other inlet and to close said one inlet when said pressure differential reaches a predetermined level, said bore being stepped to define a larger diameter portion and a pair of smaller diameter portions, one of said smaller portions corresponding to said one inlet and the other smaller portion corresponding to said other inlet, said larger diameter portion cooperating with said smaller diameter portions to define a pair of shoulders corresponding to each of said inlets, said shuttle including a pair of stems projecting from opposite ends of said shuttle, one of said stems defining said one portion of said one area, said shuttle and said stems cooperating to define a pair of annular end faces extending radially outward from said stems, one of said end faces defining said other portion of said one area, said shuttle also including an abutment engaging a corresponding abutment on said bore when said other inlet is closed.

4,281,678

THROTTLING MUD CHOKE APPARATUS

Jack R. Claycomb, 8226 Waynemer, Houston, Tex. 77040

Continuation-in-part of Ser. No. 727,031, Sep. 27, 1976, Pat. No. 4,190,073. This application Apr. 16, 1979, Ser. No. 30,473
Int. Cl.³ F16K *51/00*
U.S. Cl. 137—238 **7 Claims**



1. A choke for controlling the flow of mud which comprises;

a hollow valve body having a passage therethrough;

a valve seat having an encircling, tapered face surrounding an axial passage for directing mud flow past said tapered face within said valve body;

an encircling valve seat shoulder lying in a plane perpendicular to the flow through said axial passage defining an upstream located closure face cooperatively positioned relative to said valve seat;

a valve element having an external tapered face conforming to said valve seat tapered face which said valve element, on movement, moves into a concentric, centrally positioned first throttling ocation within said valve seat opposite said valve seat tapered face and which said valve element and said valve seat tapered faces define a gap therebetween for throttling mud flow passing through the gap, and wherein said valve element controllably blocks

the axial passage flow of mud past said valve seat on further movement of said valve element within said valve seat defining a second throttling location having reduced flow compared to said first throttling location;

said valve element and said valve seat cooperating as a flushing means for the gap therebetween during closure to the second throttling location;

a surrounding shoulder on said valve element which shoulder is adapted to conform to and seat against said valve seat shoulder to plug and close the flow of mud through the gap between said valve element and said valve seat;

means for moving said valve element into a fully closed position relative to said valve seat;

inlet and outlet means communicating with said passage through said valve body;

mounting means connected to said moving means and also connected to said valve element, said mounting means including a lock means which lock means secures said valve element to said moving means;

wherein said mounting means threads to and unthreads from said moving means and wherein said lock means secures said mounting means against unthreading; and

wherein said lock means comprises a ring around said mounting means which is secured thereto by cooperative key and key slot means and which further include wrench connective means to enable a tool to be engaged therewith for rotating said ring and said mounting means as a unit to thread said moving means.

4,281,679

FLOW CONTROL MEANS FOR USE IN AN ADAPTOR ASSEMBLY

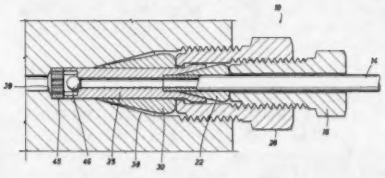
Stanley D. Stearns, P.O. Box 55603, Houston, Tex. 77055

Filed Aug. 27, 1979, Ser. No. 69,789

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

Int. Cl.³ F16K *15/04*

U.S. Cl. 137—515.5 **5 Claims**



1. An adaptor for connecting a tubing to a fitting to accommodate interconnection therebetween which comprises:

(a) a hollow nut adapted to be positioned about a tubing;

(b) an elongate, hollow, tubular sleeve having an internal passage and first shoulder therein facing the end of the tubing;

(c) a first tapered spool adapted to be forced into the end of said sleeve by said nut and surrounding said tubing to wedge against the tubing and thereby grip around the tubing;.

(d) an elongate coupling having:

(1) an axial passage therethrough;

(2) a first set of threads at one end of said passage for engaging said hollow nut;

(3) a second set of threads for connection to a male or female fitting;

(4) a second shoulder facing away from the end at which said hollow nut is threaded to said coupling;

(5) a radial thickness in said coupling defined between the radii of said first and second sets of threads which is at least in part related to the relative diameters of the tubing and the fitting;

(6) means defining a receptacle for receiving that portion of said tubular sleeve that is remote from said tubing and defining a tapered internal seat surface surrounding said tubular sleeve, said means also defining an internal passage and a third shoulder therein facing the ends of said tubing and tubular sleeve;

(e) a second tapered spool adapted to be abutted against said second shoulder and inserted into said tapered internal seat surface in said fitting surrounding said hollow sleeve and wedging thereagainst to grip said sleeve in axial communication with a passage through the fitting;

(f) force transmission means disposed within said receptacle and being in force transmitting engagement with said third shoulder and the end of said tubular sleeve; and

(g) flow control means located within said receptacle and being serially in communication with the passage in the fitting and the tubing and clamped between said hollow nut and the fitting on threaded assembly with said elongate coupling.

4,281,680

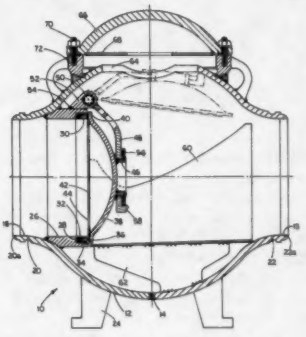
SWING CHECK VALVE CONSTRUCTION

Roger L. Ripert, Concord, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Aug. 17, 1979, Ser. No. 67,325

Int. Cl.³ F16K *15/03, 15/18*

U.S. Cl. 137—527.4 **4 Claims**



1. A swing check valve for a large diameter oil and gas transmission pipeline comprising;

a generally spherical valve body fabricated from rolled steel;

outer generally cylindrical hub members integral with said body and formed therefrom with flow passages therethrough, the inner diameters of said outer hub members reducing gradually to the inner diameter of the pipeline at their outer ends;

a separate cylindrical seat hub member of said inner pipeline diameter welded in said body to extend inward thereof around one of said flow passages and generally axially aligned therewith;

a seat ring recess cut in the inner end of said seat hub member;

a valve clapper;

a seal ring positioned by said seat hub member for engagement by said clapper in the closed position;

a fixed hinge member having a rotary bearing therethrough mounted on the top portion of said seat hub member without valve body engagement;

an arm secured at one end to the back of said valve clapper and having a transverse bore through the other end coaxial with said bearing;

a shaft rotatable in said bearing and secured in said bore; and

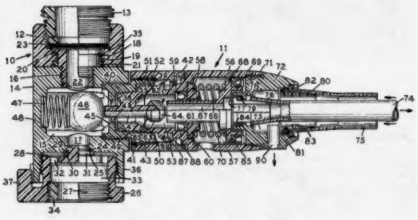
internal access means;

whereby the clapper may be mounted and adjusted for proper seating with the seat hub member prior to installation of the seat hub member within the valve body.

4,281,681
DIVERTER ATTACHMENT FOR WATER-POWERED APPLIANCE

Walter D. Teague, Jr., Tweed Blvd., Nyack, N.Y. 10960, and Arthur T. Sempliner, 37-04 Van Nostrand Pl., Douglaston, N.Y. 11363

Filed Oct. 29, 1979, Ser. No. 88,771
Int. Cl.[3] F16L *37/28;* F16K *47/08*
U.S. Cl. 137—562 10 Claims



6. A diverter assembly for a water-powered appliance or the like, comprising

(a) a body member attachable to a faucet or the like and including an internal fluid passage-forming means in fluid communication with said faucet,

(b) flexible fluid conduit means in flow communication with said internal fluid passage-forming means,

(c) a throttling member associated with said internal fluid passage-forming means,

(d) said internal fluid-flow passage-forming means and said throttling member being co-operable upon an increase of fluid pressure within the passage-forming means above a predetermined value to restrict fluid flow into said flexible fluid conduit means thereby regulating fluid pressure therein.

10. A diverter assembly for a water powered appliance or the like, comprising

(a) a generally fixed part for attachment to a faucet or the like,

(b) a removable part attachable to said generally fixed part,

(c) said generally fixed part having a downwardly opening recess therein for the downward passage of water from a faucet, and a laterally opening recess communicating with said downwardly opening recess,

(d) said generally fixed part having a collar for attachment to a faucet and a body portion connected to said collar for swiveling movement about a vertical axis coaxial with said collar,

(e) said body portion having a vertical through passage for the direct downward flow of water from said faucet and a laterally opening passage communicating with said vertical through passage,

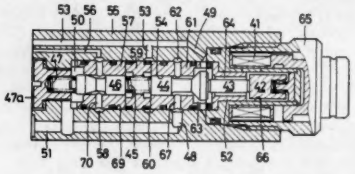
(f) a removable part having a connecting member insertable in and removable from said laterally opening recess,

(g) said connecting member having a lateral fluid passage therethrough adapted for communication with said faucet when said connecting member is received in said laterally opening passage.

4,281,682
PROPORTIONAL CONTROL TYPE REMOTE-CONTROL DIRECTION SWITCHING CONTROL VALVE DEVICE

Yuji Satoh, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Division of Ser. No. 57,410, Jul. 13, 1979. This application Jun. 30, 1980, Ser. No. 164,309
Claims priority, application Japan, Jul. 18, 1978, 53-86790; Jul. 18, 1978, 53-86791
Int. Cl.[3] F15B *13/044*
U.S. Cl. 137—596.17 1 Claim



1. A proportional control type remote-control direction switching control valve device comprising:

a first valve disposed between a liquid feed passage and an output passage to be opened and closed;

a second valve disposed between said output passage and a liquid returning passage to be opened and closed;

a first spring in abutment with said first valve to urge said valve toward a closed position;

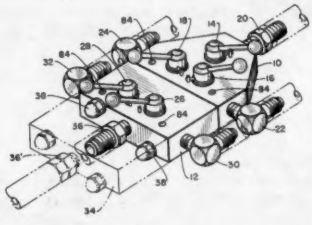
a second spring interposed between said first valve and said second valve, said second spring having a biasing force greater than that of said first spring; and

an electromagnetic means in abutment with said second valve and energizable to move said second valve in a closing direction and to move said first valve in an opening direction, and wherein said first and second valves and said first and second springs are disposed in a linear array and said first valve is subjected to the pressure of said output passage so as to be moved thereby in a closing direction.

4,281,683
MODULAR MULTIPLE-FLUID COMPONENT SELECTION AND DELIVERY SYSTEM

Robert D. Hetherington, Sunland, and David W. Goelz, Burbank, both of Calif., assignors to Poly-Glas Systems, Sun Valley, Calif.

Continuation of Ser. No. 968,609, Dec. 11, 1978, Pat. No. 4,215,721. This application Jun. 2, 1980, Ser. No. 155,412
The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.
Int. Cl.[3] F16K *11/22*
U.S. Cl. 137—606 10 Claims



1. A modular multiple-fluid component selection and delivery system comprising:

a first block;

a main passageway passing through said first block;

valve means intersecting said main passageway at one end of said first block;

a plurality of secondary passageways intersecting said main passageway;

second valve means intersecting each of said secondary passageways for controlling the flow of a fluid component through each of said secondary passageways to said main passage way;

at least one auxiliary block attached to said first block having a planar face abutting a planar face on the other end of said first block;

a main passageway in said auxiliary block in alignment with the main passageway in said first block;

said at least one auxiliary block having a plurality of secondary passageways intersecting with said main passageway;

third valve means intersecting said secondary passageways for controlling the flow of a fluid component through each of said secondary passageways in said at least one auxiliary block to said main passageways;

aligning means automatically aligning the main passageway in said first block with the main passageway in said auxiliary block;

sealing means sealing the transition of the main passageway from block to block; and

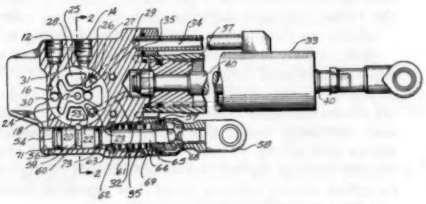
a hose fitting attached to the end of the main passageway in the last of said blocks.

4,281,684

BALANCED ROTARY-FACED VALVE

Helmut Broeg, Redondo Beach, Calif., assignor to Dubro, Inc., Gardena, Calif.

Filed Sep. 24, 1979, Ser. No. 78,241
Int. Cl.³ F16K *11/06*
U.S. Cl. 137—625.21 **15 Claims**



1. A balanced rotary-faced valve for controlling the flow of pressurized fluid to hydraulic apparatus having extend and retract ports, the valve comprising:

means for inletting and draining pressurized hydraulic fluid from the valve;

a valve body portion having a flat land portion and a plurality of recesses adjacent to and opening at the plane of the land portion, the recesses including two opposed pressurized fluid receiving recesses, a retract recess in fluid communication with the retract port, an extend recess in fluid communication with the extend port, and a drain recess in fluid communication with the pressurized fluid drain means;

pressure port means in fluid communication with the pressurized hydraulic fluid inlet means for providing pressurized hydraulic fluid to a station at the land portion of the body;

a disk having first and second faces and an axis about which said disk is rotatable, the first face in surface contact with the flat land portion of the body and having pressure-drain coupling recesses and extend and retract recesses capable of registration with corresponding retract and extend recesses in the body portion;

means defining an annular groove in the second face of the disk;

means defining a first pair of diametrically opposed passageways between the groove and the first face of the disk, each passageway in fluid communication with a corresponding body portion pressurized fluid receiving recess so that any reaction forces created thereby act in a direction coaxially with the axis of the disk;

means defining a second passageway through the disk for guiding pressurized fluid from the body portion station to the groove;

sealing means for preventing the pressurized fluid from flowing out of the groove except through the first pair of passagways, the sealing means having an area in contact with the pressurized fluid thereby creating a predetermined counter force upon the second face of the disk to urge said disk toward the flat land portion, in opposition to any pressurized fluid created force on the first face of the disk;

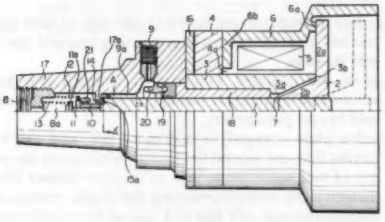
means for rotating the disk to neutral, first and second positions so that in the neutral position the pressure-drain coupling recesses in the disk overlays corresponding pressure and drain recesses of the body providing fluid communication therebetween and, thus, the inletted pressurized fluid flows from the pressure recess to the drain recess and so that in a first position the extend recess in the disk overlays the pressure and extend recesses of the body and the retract recess in the disk overlays the drain and retract recesses of the body providing fluid communication therebetween so that an equal amount of fluid entering the extend port exits from the retract port, and so that in a second position the retract recess in the disk overlays the pressure and retract recesses of the body and the extend recess in the disk overlays the drain and extend recesses of the body providing fluid communication therebetween so that an equal amount of fluid entering the retract ports exits from the extend port.

4,281,685

ELECTROMAGNETIC LOCKING TYPE ACTUATOR

Tamio Uemura, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Filed Mar. 26, 1979, Ser. No. 24,039
Claims priority, application Japan, Mar. 24, 1978, 53-33704
Int. Cl.³ F16K *31/08*
U.S. Cl. 137—628 **7 Claims**



1. An electromagnetic locking type actuator, comprising:

a body having a fluid passage therethrough;

a control member reciprocatable in said body for controlling the fluid pressure in said passage;

an electromagnetic means positioned on said body for applying a first magnetomotive force to said control member, said electromagnetic means having an inner yoke, an outer yoke including a flange portion around said inner yoke, an electromagnetic coil between said inner and outer yokes, and means for directing an energizing current through said coil in one direction and in a second direction which is the opposite of said one direction; and

a permanent magnet means positioned adjacent to and separated from said electromagnetic coil by said flange portion of the outer yoke for directing flux to said yokes for apply-

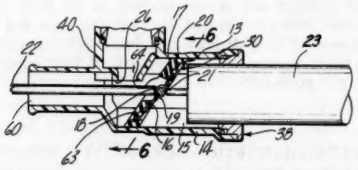
ing a second magnetomotive force in one direction to said control member at all times, said electromagnetic means, when an electric current in one direction is applied thereto, generating a first magnetomotive force in the said one direction for moving said control member toward said permanent magnet means and said electromagnetic means to a movement terminating position, and said permanent magnet means holding said control member at said movement terminating position after said first magnetomotive force no longer acts after the electric current is discontinued, and when an electric current in a direction opposite said one direction is applied thereto, generating a first magnetomotive force cancelling out said second magnetomotive force, whereby said control member is released from the effect of magnetomotive forces; said electromagnetic means having a magnetic gap between said inner yoke and said flange portion of the outer yoke for preventing the flux of said permanent magnet means from leaking directly to said inner yoke from said flange portion of the outer yoke.

4,281,686

THREE WAY BUTTERFLY VALVE

Gordon R. Gerlitz, 3901 Hammersberg Rd., Flint, Mich. 48507

Filed Nov. 23, 1979, Ser. No. 96,672
Int. Cl.³ F16K *5/00*
U.S. Cl. 137—887 **25 Claims**



8. A vacuum control valve assembly for regulating liquid flow in an automotive heating system comprising:

a housing having an opening therethrough, at least a portion of said opening defining a cylindrical passage, said cylindrical passage having first and second flat parallel surfaces thereon;

a bypass passageway mounted to the side of said housing, one end of said passageway projecting into said opening in said housing;

a pivot pin mounted diametrically through said housing across said cylindrical passage in spaced relationship to said bypass passageway;

a valve plate engaged to said pivot pin, said valve plate having first and second flat parallel surfaces on the periphery of said valve plate, said valve plate further having a diametrically extending central flat planar portion which extends through said first and second flat parallel surfaces in said valve plate and extends radially of said cylindrical passage when said valve plate is in inclined position with respect to the axis of said cylindrical passage and the periphery of said valve plate is in sealing engagement with the interior surface of said cylindrical passage whereby said valve plate stops the flow of fluid through said cylindrical passage and permits flow through said bypass passageway when said valve plate is in a first predetermined position and said valve plate restricts the flow of fluid through said bypass passageway and permits the flow of fluid through said cylindrical passage when said valve plate is in a second predetermined position;

means for restricting the flow of fluid through said bypass passageway when said valve plate is in parallel position with respect to the axis of said cylindrical passage and in proximate contact with said bypass passageway;

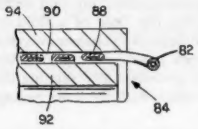
means for piloting said valve plate in said cylindrical passage of said housing.

4,281,687

FLUID STORAGE DEVICE

Burleigh M. Hutchins, North Attleboro, and Louis Abrahams, Worcester, both of Mass., assignors to Waters Associates, Inc., Milford, Mass.

Continuation of Ser. No. 10,686, Feb. 9, 1979, Pat. No. 4,245,963. This application Feb. 25, 1980, Ser. No. 124,309
Int. Cl.³ E03B *7/10*
U.S. Cl. 138—28 **2 Claims**



2. A fluid storage device for smoothing fluid delivery, said device comprising

a length of flattened tubing coiled in a helix,

said tubing having generally flat, radially inward and outward wall portions adapted to bow radially inward and outward, respectively, when internal pressure increases, to thereby increase the internal volume per unit length of said tubing,

an inner cylindrical restraining wall positioned adjacent to said radially inward wall portion, and

an outer cylindrical restraining wall positioned adjacent to said radially outward wall portion,

the radial separation between said walls being selected relative to the outside thickness of said tubing to restrain radially inward and outward bowing of said wall portions beyond their elastic strain limits,

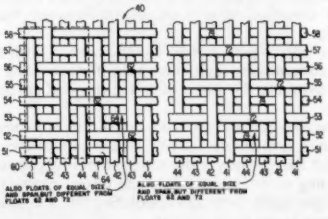
whereby an increase in the pressure of fluid inside said tubing allows said walls to expand until they are restrained by said restraining walls, and a decrease in said pressure allows said tubing to relax back to its original shape, thereby keeping the internal volume of said tubing small to reduce mixing between serial flow segments entering said fluid storage device.

4,281,688

REVERSIBLE FORMING FABRIC HAVING DOMINATING FLOATS ON EACH FACE

Brendan W. Kelly, Beaconsfield, and Robert L. Boily, Joliette, both of Canada, assignors to Scapa Dryers (Canada) Ltd., Joliette, Canada

Filed May 1, 1979, Ser. No. 35,064
Int. Cl.³ D03D *25/00*
U.S. Cl. 139—383 A **13 Claims**



1. A forming fabric having a paper stock receiving surface and a roll-contacting surface, said forming fabric comprising a

plurality of interwoven machine direction yarns and a plurality of cross-machine direction yarns, every other of said cross-machine direction yarns spanning a first number of adjacent machine direction yarns in defining one of said surfaces and spanning a second number of machine direction yarns in defining the other of said surfaces, said second number being different from said first number, said machine direction yarns of said second number being adjacent when said second number is greater than one; and

the remainder of said cross-machine direction yarns spanning a third number of adjacent machine direction yarns in defining said other surface and spanning a fourth number of machine direction yarns in defining said one surface, said machine direction yarns of said fourth number being adjacent when said fourth number is greater than one, and said third and fourth numbers being equal to said first and second numbers, respectively.

4,281,689

WOVEN FABRIC MADE OF LOW MODULUS, LARGE DIAMETER FIBERS

Joseph C. Benedyk, Highland Park, Ill., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 26, 1979, Ser. No. 33,461

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.[3] D02G *3/00*; D04H *11/00*

U.S. Cl. 139—420 A **30 Claims**

1. A woven fabric, comprising: yarn made of a polymeric fiber having an elastic modulus of from about 2,000 to about 80,000 p.s.i., an area moment of inertia of from about 400×10^{-14} to about 7.8×10^{-9}in.^{4}, and a stiffness parameter of from about 8.0×10^{-9} to about 62.4×10^{-5} p.s.i., said fiber providing said woven fabric with a high shrink rate when exposed to intense heat.

4,281,690

METHOD AND APPARATUS FOR MAKING WIRE BINDERS FOR PADS OR THE LIKE

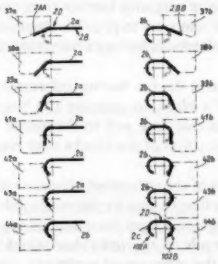
Jörn-Uwe Lemburg, Richmond, Va., assignor to E. C. H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,411

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847700

Int. Cl.[3] B21F *45/00*

U.S. Cl. 140—71 R **20 Claims**



1. A method of converting a web of undulate wire which includes two longitudinally extending marginal portions into a series of interconnected substantially C-shaped binders, comprising the steps of moving the web lengthwise: gradually imparting to successive increments of one marginal portion of the web a concavo-convex configuration which, in cross-section, resembles substantially one-half of the letter C; and thereafter gradually imparting to successive increments of the other marginal portion a concavo-convex configuration which is substantially a mirror image of concavo-convex configuration of the one marginal portion.

4,281,691

DEVICE FOR TRANSFERRING AND PACKAGING CONTAMINANTS SUCH AS RADIOACTIVE PRODUCTS WITHIN A LEAK-TIGHT SHEATH

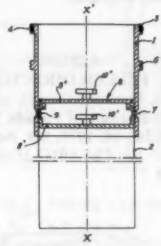
Rene Goutard, Verrieres le Buisson, and Raymond Levardon, Paris, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 15, 1979, Ser. No. 66,522

Claims priority, application France, Aug. 25, 1978, 78 24625

Int. Cl.[3] G21F *7/00*

U.S. Cl. 141—1 **11 Claims**



1. A device for transferring a noxious product through a lock-chamber which is rigidly fixed to a leak-tight partition-wall and for packaging said product within a leak-tight sheath, wherein said device comprises a sleeve having a central cavity for establishing a communication between said lock-chamber and said sheath while ensuring tightness against outleakage to the environment, and a seal plug having a double wall, said seal plug being adapted to be slidably introduced within said cavity and means being provided to lock and seal said seal plug within said cavity for preventing said communication, simultaneous cutting of the seal plug and the sleeve operating to separately seal-off said lock-chamber and said sheath by means of each wall of said seal plug.

4,281,692

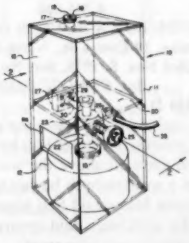
APPARATUS FOR FILLING LAMPS

Michael V. Caccamisi, Rte. 2, Box 698, Garland, Tex. 75040

Filed Jul. 26, 1979, Ser. No. 60,923

Int. Cl.[3] B65B *3/06*

U.S. Cl. 141—370 **7 Claims**



1. Apparatus for filling oil lamps of the kind having an oil supply container with a centrally positioned fill opening in the top thereof comprising:

an open-bottomed housing proportioned to be removably fitted over the oil supply container of an oil lamp and to substantially center said container within the confines of said housing;

an oil supply reservoir in said housing above the portion thereof removably confining the oil supply container of said lamp;

an oil delivery line extending from the bottom of said reservoir to the fill opening of the oil supply container of said lamp, said delivery line being in fluid communication with said reservoir, open at its lower end, and further being substantially aligned with the fill opening of said oil supply container at least at lower end of said line;

valve means in said line;

bias means normally urging said valve to a closed position; and

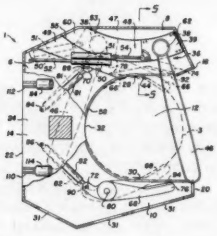
valve operating means operable from the exterior of said housing for opening said valve to admit oil from said reservoir to said container.

4,281,693

FELLER DIRECTOR

Donald C. Moulson, Burnaby, Canada, assignor to Forest Engineering Research Institute of Canada, Vancouver, Canada

Filed Jul. 18, 1979, Ser. No. 58,493
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—34 R **17 Claims**



1. A feller head for a tree felling apparatus, comprising: a first forward projection adjacent a tree trunk receiving recess; a chain saw having opposing ends mounted within the first projection, one of said ends extending away from the first projection in the direction of the recess, and having a motor for powering the chain saw mounted within the first projection; and means for moving the chain saw opposing ends along curved substantially parallel paths within the projection, the path being convex in the direction of the recess.

4,281,694

CUTTING GUIDE FOR A ROUTER OR SIMILAR TOOL

Thomas E. Gorman, 19 Eames St., North Reading, Mass. 01864

Filed Nov. 5, 1979, Ser. No. 91,151
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—134 D **12 Claims**

1. A cutting tool guide apparatus for placement on a work surface and for moving a cutting tool between:

a first position elevated above the work surface and disengaged from a workpiece to be cut; and

a second position below said first position for engaging the tool with the workpiece, said apparatus comprising:

a frame comprising a circular track;

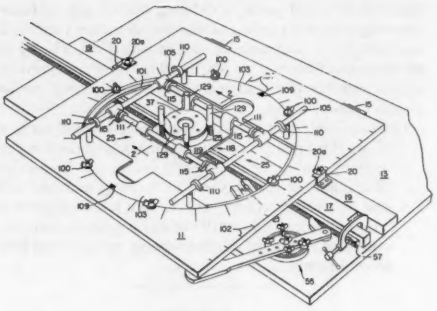
a rotatable member mounted for rotation on said track;

a guide assembly mounted on said rotatable member, said guide assembly comprising:

a rectilinear guide member joined to and rotatable in conjunction with the rotatable member;

tool support means slidable engaging said guide member; and

stops for defining the limits of sliding movement of said tool support means along said rectilinear guide member; and



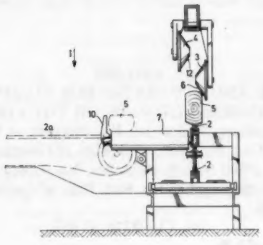
means for moving said tool support between said first and second positions.

4,281,695

METHOD AND SYSTEM OF ALIGNING LUMBER, ESPECIALLY BLOCKS FROM WHICH THE FIRST PAIR OF CANTS HAS BEEN REMOVED

Olli Heikinheimo, Helsinki, Finland, assignor to Plan-Shell Oy, Helsinki, Finland

Filed Nov. 13, 1978, Ser. No. 960,180
Int. Cl.³ B27B *1/00*
U.S. Cl. 144—312 **5 Claims**



1. A method of aligning lumber from which a first pair of cants has been removed to provide blocks for feeding along a sawing line, said blocks having a base, sides and a top, comprising:

using a control device having information to define a side profile of a block to examine the blocks which traverse thereby to calculate and to determine the optimal direction and position of the blocks with respect to the sawing line;

moving each of the individual blocks on its base in a longitudinal direction to pass by the control device to permit the control device to produce an output characteristic for defining each of the individual block's side profile and outlining the even sawed surface;

causing one of the individual blocks to fall on its side;

providing at least two adjustable stops and adjusting the stops relative to the individual blocks side profile in response to the output characteristics of the block provided by the control device; and,

transversely moving the block after it has fallen on its side against the at least two adjustable stops, the adjustable stops being positioned in a desired manner in response to information contained in the output characteristic so as to ascertain an optimum amount of wood products at a next

processing stage in accordance with information obtained by the control device from the block.

4,281,696

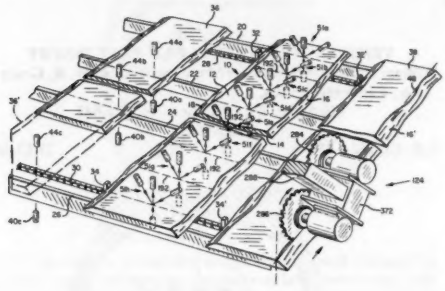
AUTOMATIC SAWMILL METHOD AND APPARATUS

Vincent M. Howard, Eugene; Carl W. Maxey, Corvallis, and John P. Dellett, Lake Oswego, all of Oreg., assignors to Aaron U. Jones, Eugene, Oreg.

Division of Ser. No. 931,722, Aug. 7, 1978. This application Aug. 27, 1979, Ser. No. 69,934

Int. Cl.[3] **B27B** *1/00, 31/06*

U.S. Cl. 144—312 **5 Claims**



1. The method of processing cants sawn from logs and characterized by a longitudinal dimension acquired lengthways from a said log and a width dimension acquired crossways of said log and having at least one irregular lateral edge, said method comprising:

detecting the irregular lateral edge of said cant to ascertain irregular indentations in said lateral edge,

automatically selecting indentations on said lateral edge for determining a straight saw line,

detecting if other indentations on said lateral edge fall within said saw line,

redetermining said saw line to extend in substantially tangential relation through at least one such other indentation until no other indentations fall within said line,

and sawing said cant along said saw line for substantially removing the irregularities of said lateral edge.

4,281,697

FIREWOOD SYSTEMS

Leo L. Heikkinen, and Charles L. Lundborg, both of Prentice, Wis., assignors to LaFont Corporation, Prentice, Wis.

Division of Ser. No. 821,793, Aug. 4, 1977, Pat. No. 4,173,237. This application Apr. 25, 1979, Ser. No. 33,289

Int. Cl.[3] **B27L** *7/00*

U.S. Cl. 144—326 R **3 Claims**

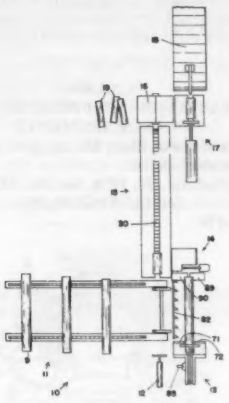
1. A method of converting a log into firewood comprising the steps of:

placing a plurality of logs on a log support;

selecting a log from the plurality of logs on the log support;

grasping and holding the log at one end with a log feeder while cutting the opposite end of the log to produce a cut log;

transporting the cut log into a splitting mechansim whereby a cut log requiring splitting can be split;



splitting the cut log by forcing a splitting member into the cut log; and

transferring the cut log into a bin for transporting to a user.

4,281,698

PENCIL SHARPENER

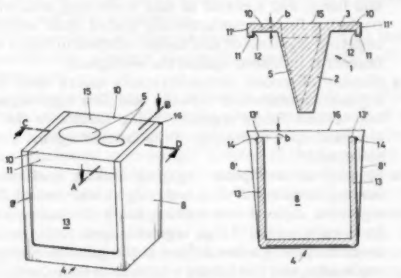
Werner Mobius, Hindenburgstrasse 77, 8520 Erlangen, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 30,653

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 7812337[U]

Int. Cl.[3] **B43L** *23/00*

U.S. Cl. 145—3.31 **4 Claims**



1. A pencil sharpener having a collector housing and an integral cover/sharpener unit releasably attachable to the collector housing with the sharpener extending into the collector housing, the collector housing having side walls comprising

the cover/sharpener-unit being defined on two opposite sides by two continuous outer guiding surfaces;

the collector housing having two inner guiding surfaces on two opposite facing walls, the dimensions of the sharpener elements being selected so that said outer guiding surfaces are parallel to and slidingly engage said inner guiding surfaces to guide said cover/sharpener-unit during its insertion into and removal from said housing;

said cover at the sides of the sharpener other than the sides having said outer guiding surfaces is provided with portions which laterally project over the side walls of said housing having said inner guiding surfaces, said side walls

serving as support walls for said laterally projecting portions; and

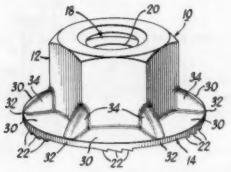
the cover/sharpener-unit being releasably attachable to the collector housing by a snap means which comprises cooperating engageable protrusions and recesses integral with said support walls and said laterally extending portions.

4,281,699

LOCKING FASTENER WITH RESILIENT AND RIGID FLANGE SEGMENTS

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Apr. 20, 1979, Ser. No. 31,759
Int. Cl.³ F16B *39/282*
U.S. Cl. 411—176 **4 Claims**



1. A locking fastener adapted to be tightened against a workpiece in a threaded joint and comprising:

a solid body portion having a wrenching structure with a plurality of corners;

a continuous, generally circular flange formed integrally at a workpiece engaging end of said body portion and extending radially outward from said body portion;

said flange defining an annular, generally planar bearing surface adapted to face the workpiece in the threaded joint;

a plurality of discrete and spaced apart reinforcements formed integrally with said body portion and flange, each reinforcement extending both radially and axially between said flange and a corner of said wrenching structure for rendering first circumferentially spaced apart workpiece engaging segments of said flange substantially rigid as the fastener is tightened against the workpiece;

a plurality of second circumferentially spaced apart flange segments interspersed between said first rigid segments, said second flange segments being flexible in the axial direction upon tightening of the fastener against a workpiece; and

a plurality of workpiece engaging locking teeth on said bearing surface and disposed only at said second flange segments, at least one locking tooth projecting axially from each second flange segment, each tooth having a crest comprising a line defined at the junction of opposite tooth sides, said line having a substantial component in the radial direction.

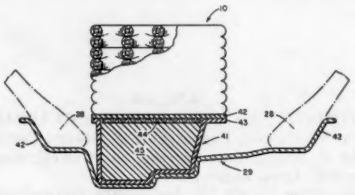
4,281,700

RUN-FLAT VEHICLE TIRE

William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 33,679, Apr. 26, 1979, which is a continuation-in-part of Ser. No. 7,068, Jan. 29, 1979, abandoned. This application Dec. 31, 1979, Ser. No. 108,891
Int. Cl.³ B60C *17/04*
U.S. Cl. 152—158 **35 Claims**

1. A run-flat tire assembly comprising (a) a pneumatic vehicle tire; (b) a supporting rim for said tire; (c) a flexible compressible ring located within said tire comprised of a plurality of successively wound circumferential layers of elastomer coated filamentary material, said filamentary material having void spaces therebetween and being bonded together at point of contact thereof; and (d) a spacer-support member comprising a tube located between said rim and said ring and acting to space said ring from said rim and to support it when said tire is operating in a run-flat conditions, said tube having been ex-



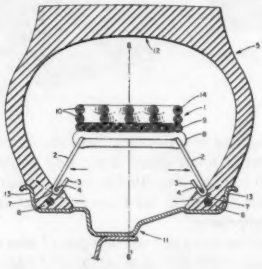
panded in volume after insertion in said tire by introduction thereto of a fluid material which subsequently is caused to harden into a solidified mass after introduction into said tube.

4,281,701

VEHICLE TIRE HAVING RUN FLAT INSERT

William C. Ross, Winchester, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 15, 1980, Ser. No. 121,842
Int. Cl.³ B60C *17/04*
U.S. Cl. 152—158 **23 Claims**



1. In combination, a pneumatic vehicle tire having non-extensible bead portions, a rim having flanges containing said bead portions, and an insert assembly to impart a run-flat capability to the tire positioned within said tire, said assembly comprising

(a) a ring member for providing rotational support to said vehicle during run-flat operation, said ring member being spaced from said rim and said tire during non-runflat operation, said ring further having opposed lateral edges; and,

(b) positioned between said ring and said rim, support means for said ring comprising first array of circumferentially-arranged, spaced, bracing elements depending from one said lateral edge of said ring, a second array of said bracing elements depending from the opposed lateral edge of said ring, each said bracing element having an upper end adjacent said ring and a lower end remote therefrom, each said bracing element extending outwardly from said lateral edge at an angle thereto;

said bead portions of said tire having means engaging said lower ends of said bracing elements to thereby lock said insert assembly in position within said tire, said bracing elements being movably joined to said lateral edges of said ring in order that said bracing elements may be moved outwardly into said engagement position with said beads portions after insertion of said assembly into said tire, whereby in the event of collapse of said tire upon said ring, said ring is supported by said bracing elements in contact with said bead portions contained by said flanges.

4,281,702
PNEUMATIC TIRE

Karl A. Grosch, Roetgen; Paul H. Moitzheim; Gert Schloesser, both of Aachen, all of Fed. Rep. of Germany, and Daniel J. M. Hensgens, Ubach-Overworms, Netherlands, assignors to Uniroyal Engelbert Reifen GmbH, Aachen, Fed. Rep. of Germany

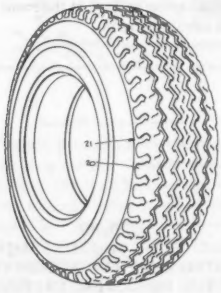
Filed Jul. 10, 1978, Ser. No. 922,911

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 7725496[U]

The portion of the term of this patent subsequent to Apr. 24, 1993, has been disclaimed.

Int. Cl.[3] B60C *11/00*

U.S. Cl. 152—209 R 1 Claim



1. A pneumatic radial tire comprising a tread defined by shoulder edges and having circumferentially continuous profile ribs of zig-zag contour defined by circumferential grooves of zig-zag contour, the axial width of the tread between the shoulder edges comprising only five ribs including marginal ribs and one central rib of respectively large axial width and comparatively narrower respectively intermediately situated ribs and each intermediate rib being defined with respect to said central rib by an axially wide continuous circumferential groove and, with respect to said marginal ribs, by a comparatively narrower continuous circumferential groove, said marginal ribs having substantially the same axial width as the width of said central rib, the axial width of said marginal ribs and of said central rib constituting in each case respectively substantially one-sixth of the axial tread width between said shoulder edges, said marginal ribs being provided with profile sections oriented substantially radially inwardly toward the tire sidewall and defined by circumferentially spatially arranged marginal grooves and in which said marginal grooves terminate at the level of the free extremities of the profile sections in each case in a circumferentially continuous groove.

4,281,703
ENERGY SAVING TIRE WITH LARGE PARTICLE SIZE, HIGH STRUCTURE CARBON BLACK IN TREAD

Shamim Ahmad, Canal Fulton, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 19, 1979, Ser. No. 95,265

Int. Cl.[3] B60C *11/00, 1/00*

U.S. Cl. 152—209 R 6 Claims

1. In a tubeless pneumatic radial tire comprising two spaced inextensible beads, a ground contacting tread portion, a pair of individual sidewalls extending radially inward from the axial outer edges of said tread portion to join the respective beads, a carcass portion having at least one ply of rubberized cords lying essentially in radial planes wherein said cords are wrapped around said blades, an integral air impervious innerliner disposed inwardly of said carcass portion, a circumferential belt comprising at least two plies of low extensible cords with the cords in each ply parallel to each other and at an angle to the circumferential central plane of the tire and with the cords in one ply extending in a direction opposite to the cords in the other ply, the improvement consisting in the tread being formed of a composition comprising:

(a) 100 parts by weight of rubber hydrocarbon wherein at least 90 parts of the rubber hydrocarbon is selected from at least one of the group consisting of cis-polyisoprene and cis-polybutadiene,

(b) less than 10 parts by weight of processing oil per 100 parts by weight of rubber,

(c) from about 30 to about 60 parts by weight of carbon black per 100 parts by weight of rubber, wherein the carbon black has a particle size greater than about 50 millimicrons and a dibutyl phthalate absorption value greater than 120, and

(d) sufficient curing agents to effect vulcanization.

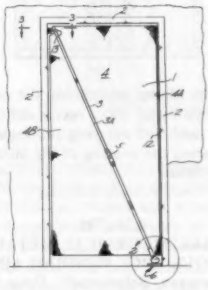
4,281,704
DOOR

Ralph T. Sorensen, 230 Cedar, Junction City, Oreg. 97448

Filed Sep. 13, 1979, Ser. No. 75,522

Int. Cl.[3] A47H *5/00*

U.S. Cl. 160—340 4 Claims



1. A door for use within an interior door frame of a building structure, said door comprising,

an elongate rigid member inclined so as to have its ends positionable adjacent diagonally opposite corners of a doorway,

a pliable closure panel for normally occupying the door frame opening to substantially close same and affixed to said rigid member, one side of said closure panel adapted for attachment to an upright member of the door frame, a portion of said pliable closure panel is normally tensioned by said elongate rigid member with a remaining portion of said panel being suspended from said rigid member, and

pivot means supporting one end of said rigid member to permit opening and closing movement thereof when said rigid member is manually displaced during door opening.

4,281,705
PROCESS FOR CASTING OBJECTS HAVING COMPLICATED SHAPES

Tibor Jeney, Budapest, Hungary, assignor to NOVEX Talalmanyfejlesztö es Ertekesitö Külker. Rt., Budapest, Hungary

Filed Feb. 26, 1979, Ser. No. 15,319

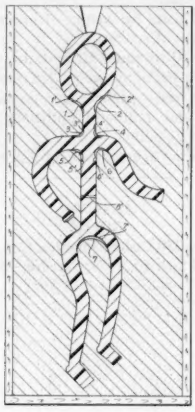
Claims priority, application Hungary, Mar. 14, 1978, 831

Int. Cl.[3] B22D *19/00;* B22C *9/04*

U.S. Cl. 164—10 8 Claims

1. A method for casting objects having complicated shapes from aluminum, zinc, and non-ferrous metals, for use in the industrial arts, comprising the steps of: using a completely combustible and gasified foam material to constitute a form in which the objects are cast; removing a thin surface layer of the foam from those surface areas where a wall thereof could be damaged by flowing melted metal, where ornamental elements or profiles are to be included in the objects prior to casting, or

where the rate of flow of melted metal is to be decreased; substituting the removed foam layer by a protective layer of a material with a stonger structure, lower thermal conductivity, lower burning and gasifying rates than those of the material of the foam casting form; reconnecting the separated foam and



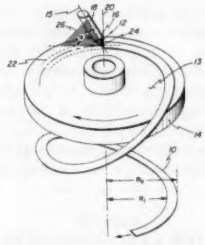
protective layers by gluing; embedding the casting form into sand; pouring melted metal into a recess defined by the foam form while in the sand; and delaying and regulating the burning of the foam during the pouring of the metal as well as the gasification of the foam.

4,281,706

METHOD OF MAKING HELICAL METALLIC RIBBON FOR CONTINUOUS EDGE WINDING APPLICATIONS

Howard H. Liebermann, Schenectady; Peter G. Frischmann, Scotia, both of N.Y., and George M. Rosenberry, Jr., Hendersonville, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,240
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 **15 Claims**



1. A method of casting metallic ribbons in helical form by chill block melt-spinning including the process steps of:

a. rotating a substrate wheel at a predetermined speed to impart to a casting surface thereon a predetermined surface velocity, said wheel having two major opposed top and bottom surfaces and a peripheral edge surface area interconnecting said major surfaces, said top surface lying substantially normal to the axis of rotation of said wheel and being said casting surface;

b. positioning a crucible with respect to the moving casting surface with the orientation of the longitudinal axis of said crucible with respect to said casting surface being defined by the inclination angle α and the azimuthal angle γ;

c. forming molten alloy of a predetermined composition in said crucible;

d. ejecting said molten alloy through an orifice in said crucible to form a melt stream having a preferred velocity, said orifice and said melt stream having axes substantially colinear with the axis of said crucible;

e. impinging said melt stream onto said moving casting surface; and

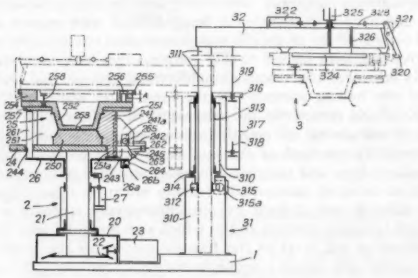
f. rapidly chilling said molten alloy impinging on said moving casting surface to form a continuous length of an edge-wound metallic ribbon having a helical shape, said ribbon having a substantially uniform cross section, a pair of substantially parallel major surfaces, and inner and outer peripheral edges of constant radii, defined by the motion of said casting surface at the locus of impingement of said melt stream thereon.

4,281,707

CENTRIFUGAL CASTING MACHINE, EQUIPPED WITH MEANS FOR STRIPPING AND AUTOMATIC RELEASE OF THE RESULTING CASTINGS

Jean Leleu, Acheres, France, assignor to Etablissements A. Voisin, Puteaux, France

Filed May 6, 1980, Ser. No. 147,160
Claims priority, application France, Dec. 20, 1979, 79 31325
Int. Cl.³ B22D *13/04*
U.S. Cl. 164—292 **10 Claims**

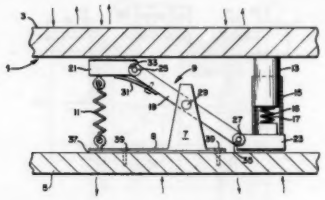


1. Centrifugal casting machine for producing castings in light alloy, and in particular vehicle wheels, comprising a mold made up of several parts integral with a support pivoting about a vertical axis, means for closing and opening the mold and means for stripping the casting, wherein the said mold is composed of a base plate integral with the said support, of lateral parts and of an upper part provided, in the vertical axis of the support, with a mold supplying orifice, the said opening and closing means are constituted by a plate, which is movable vertically along the pivoting support, and comprising pins for lifting the said upper part, being supported under a lower face of the latter, and a connecting rod assembly connecting the said lateral parts to the said plate so as to drive the latter radially when the plate moves axially, whereas the said stripping means are constituted by a bracket formed by a vertical post and by a horizontal arm rotatably and vertically movable with respect to the post, said arm being equipped with means for gripping the upper part of the mold and for stripping the casting.

4,281,708
AUTOMATIC THERMAL SWITCH

Lawrence D. Wing, Bowie, and Joseph W. Cunningham, Rockville, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,943
Int. Cl.³ F28F *27/00*
U.S. Cl. 165—32 18 Claims



1. A thermal switch for selectively varying the heat transferred between an uncontrolled variable temperature environment and a controlled temperature environment comprising:

first and second spaced members, respectively having surfaces exposed to said uncontrolled and controlled environments, said members having high thermal conductivities relative to said uncontrolled and controlled environments;

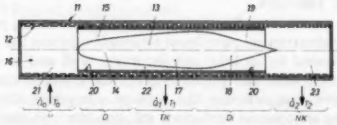
a heat motor being in heat exchange relationship with said first spaced member; and

pivotal armature means between said first and second spaced members, said armature means having a relatively high thermal conductivity and having one end thereof coupled to said heat motor, said armature means being responsive to said heat motor so that said armature means is pivoted between first and second positions in response to the amount of heat absorbed by said heat motor from said first spaced member, said armature means being in contact with said first and second spaced members in said first position to provide a high thermal conductivity path between said first and second spaced members, and said armature means being spaced from said first and second spaced members in said second position to provide a substantially low thermal conductivity path between said first and second spaced members.

4,281,709
THERMAL HEAT PUMP

Claus A. O. Busse, Arolo di Leggiuno, Italy, assignor to European Atomic Energy Community-EURATOM, Plateau du Kirchberg, Luxembourg

Filed Aug. 28, 1978, Ser. No. 937,373
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739689
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—104.22 9 Claims



1. Thermal heat pump, characterized by a heat pipe in which the vapor passage located between the heat transfer zone to the heat supply and the heat transfer zone to the heat removal has a cross section which varies across its length and which increases the velocity of the vapor flow to begin with and then decreases it and that a further heat transfer zone with heat removal is located in the area of the increased vapor velocity.

4,281,710
HEAT EXCHANGER

Fred Hadlock, Glendale, Oreg., assignor to FRAC, Inc., Glendale, Oreg.

Filed Oct. 25, 1978, Ser. No. 954,554
Int. Cl.³ F28D *7/12*; F28F *9/22*
U.S. Cl. 165—142 4 Claims

1. In a heat exchanger having an elongate central conduit for a first heat-exchange fluid and an elongate annular conduit surrounding said central conduit and arranged to receive a second heat-exchange fluid, a plurality of heat-transfer fins extending radially of said central conduit and into said annular conduit, means for delivering heat-exchange fluid to said central conduit, a first tube extending into said annular conduit at one end thereof and having a discharge outlet near the opposite end of said annular conduit, and a second tube extending into said annular conduit at said opposite end and having an intake opening adjacent said one end whereby fluid entering said annular conduit through said first tube will move rearwardly over said fins as it moves toward the intake opening of said second tube.

4,281,711
APPARATUS FOR POSITIONING A LINER ON A TUBULAR MEMBER IN A WELL BORE WITH A RETRIEVABLE PACK OFF BUSHING THEREBETWEEN

Britt O. Braddick, Houston, and Hiram E. Lindsey, Midland, both of Tex., assignors to Texas Iron Works, Inc., Houston, Tex.

Division of Ser. No. 440,714, Feb. 8, 1974, Pat. No. 3,920,075. This application Mar. 5, 1975, Ser. No. 555,691
Int. Cl.³ E21B *33/14*
U.S. Cl. 166—118 25 Claims

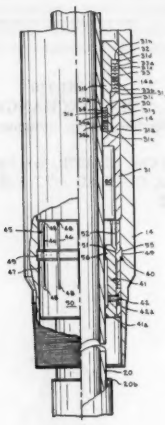
14. Apparatus for cementing a liner in a well bore including:

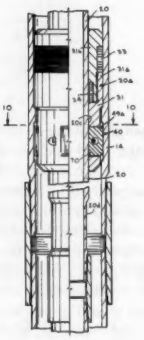
(a) a setting string which extends longitudinally in the liner;

(b) seal means releasably locked to the liner and sealingly engaging between said setting string and liner permitting at least limited axial movement of said setting string without movement of said seal means; and

(c) cooperating means on said seal means, setting string and the liner to releasably lock said seal means against axial displacement while accommodating limited axial move-

ment of said setting string, said cooperating means operable upon predetermined longitudinal movement of the





setting string to unlock said seal means from the liner for removal with said setting string from the well bore.

4,281,712

MINIMIZING CLAY AND SHALE DAMAGE IN A LOG-INJECT-LOG PROCEDURE

Robert P. Murphy, Bixby, and Frank O. Jones, Jr., Tulsa, both of Okla., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 13, 1980, Ser. No. 159,254
Int. Cl.[3] E21B *47/00, 49/00*
U.S. Cl. 166—250 **9 Claims**

2. A method for minimizing shale and clay damage to a subsurface zone during a log-inject-log procedure of said zone, said zone containing oil and water and being penetrated by a wellbore, comprising:

(a) running a pulsed neutron log,

(b) injecting an aqueous salt solution into said zone from said wellbore, said salt comprising at least 1000 ppm of said solution, whose cation is selected from a group consisting of potassium and ammonium and whose anion has no constituents having a thermal neutron capture cross section more than about 0.6×10^{-24} cm^2, and

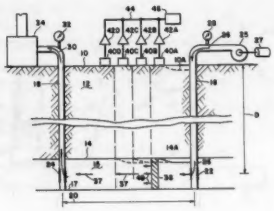
(c) running a pulsed neutron log.

4,281,713

METHOD AND APPARATUS FOR MONITORING THE POSITION AND MOVEMENT PROGRESS OF THE FLAME FRONT IN AN UNDERGROUND COMBUSTION

Milton D. Wood, Portola Valley, Calif., and Daniel Silverman, Tulsa, Okla., assignors to M. D. Wood, Inc., Palo Alto, Calif.

Filed Jul. 9, 1979, Ser. No. 56,064
Int. Cl.[3] E21B *43/243, 47/00*
U.S. Cl. 166—251 **15 Claims**



1. In a system for monitoring the progress of the flame front in an underground combustion operation, wherein the combustion takes place in a selected subsurface geological formation F, in which the overburden above said formation F is supported in part by the combustible material within said formation F, the method of monitoring the position and progress of said flame front, comprising:

(a) providing at least a first well drilled to the depth of said formation F, in which said combustion is to be initiated;

(b) providing at least a second well, spaced from said first well, to said formation F, through which products of said combustion can be brought to the surface;

(c) providing a source of combustion air to said first well at a selected super atmospheric pressure;

(d) positioning a plurality of tilt meters, at or near the surface of the earth, in at least one selected spaced array, between said first and second wells;

(e) igniting said combustible material in said formation F, at said first well, to provide a flame front;

whereby, as said combustible material is burned, under the pressure of said combustion air, said flame will progress outwardly from said first to said second well; and a portion of the overburden will slump inside of the flame front;

(f) recording the output of said tilt meters as a function of time during the progress of said flame front past the position of at least one of said tilt meters; and

(g) determining the angle of tilt of the surface of the earth in the direction of down toward said first well, in the vicinity of at least one of said tilt meters.

4,281,714

LITHIUM SALTS AS ADDITIVES IN PETROLEUM RECOVERY PROCESSES

Lawrence E. Whittington, Katy, and Warren C. Haltmar, Houston, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,682
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—274 **5 Claims**

1. In a surfactant flooding process for recovering petroleum from a subterranean petroleum reservoir wherein the reservoir is penetrated by at least one injection well and at least one production well, said wells being in fluid communication with said formation, wherein the process comprises the steps of injecting an aqueous surfactant solution through the injection well into the reservoir, forcing the surfactant solution through the reservoir and recovering petroleum from the production well, the improvement for reducing the amount of surfactant retained by the formation comprising:

injecting into the reservoir, prior to the injection of the aqueous surfactant solution, an aqueous solution contain-

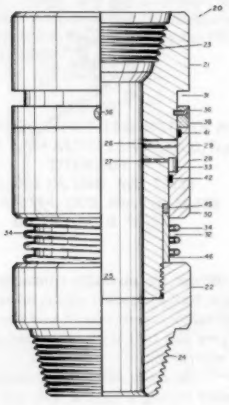
ing an amount of lithium chloride effective for reducing surfactant retention by the formation.

4,281,715

BYPASS VALVE

David L. Farley, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed May 16, 1979, Ser. No. 39,488
Int. Cl.³ E21B *47/00*
U.S. Cl. 166—317 **2 Claims**



1. An apparatus for use in a well testing string extending from the surface to a formation to be tested, said apparatus comprising:

a tubular housing having an interior bore therethrough and a port through the walls thereof;

a sliding sleeve member disposed in a first normally closed position for blocking said port and operable to a second open position for opening said port for allowing fluid to flow from the interior bore to the exterior of said apparatus, said sliding sleeve member having a differential piston exposed on one side to the pressure in the interior bore and on the other side to pressure exterior of the apparatus for moving said sliding sleeve member to the second open position when the interior bore pressure exceeds the exterior pressure and for moving said sliding sleeve member to the first normally closed position when the exterior pressure is higher than the interior pressure;

spring means for urging said sliding sleeve member to the first normally closed position;

a frangible stop means impinged upon by said sliding sleeve member in the first normally closed position arranged for stopping said sliding sleeve member between a first normally closed position and a third locked closed position and for allowing said sliding sleeve member to move to the second open position; and

a locking means for locking said sliding sleeve member in the third locked closed position after said sliding sleeve member shears said frangible stop means and moves to said third locked closed position.

4,281,716

FLEXIBLE WORKOVER RISER SYSTEM

Johnce E. Hall, Kingwood, Tex., assignor to Standard Oil Company (Indiana), Chicago, Ill.

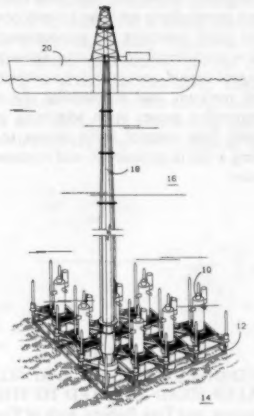
Filed Aug. 13, 1979, Ser. No. 65,793
Int. Cl.³ E21B *34/04*
U.S. Cl. 166—339 **7 Claims**

1. A method of performing operations in a selected subsea well from a platform floating on a body of water over a group of subsea wells which are produced through a production riser means to a production facility on said platform which comprises:

(a) providing a flexible workover riser on said platform,

(b) establishing a vertical, flexible workover riser channel through said platform at a location remote from the passage through which said production riser means extends, said riser channel being free of contact with the bottom of said body of water,

(c) providing vertical access to a selected tubing of said selected subsea well,



(d) running said flexible workover riser through said vertical flexible workover riser channel and into open water below said platform and connecting the lower end of said workover riser to said subsea well to provide access through said flexible workover riser into the production tubing of said well, and

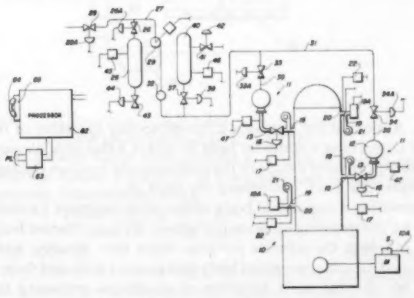
(e) conducting operations through said connected flexible workover riser.

4,281,717

EXPOLOSION SUPPRESSION SYSTEM FOR FIRE OR EXPOLOSION SUSCEPTIBLE ENCLOSURES

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Oct. 25, 1979, Ser. No. 87,828
Int. Cl.³ A62C *37/06*
U.S. Cl. 169—20 **10 Claims**



1. In a safety system for apparatus operating to reduce waste material and having a chamber in which waste material is reduced, the combination therewith of: a container for a pressurized protective agent connected to said chamber by a conduit; a normally closed valve in said conduit withholding said

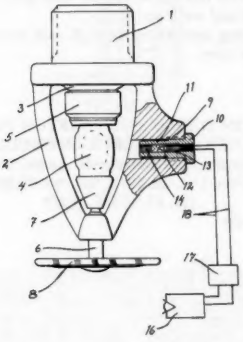
pressurized protective agent from the chamber; pressure responsive means connected to said conduit between said closed valve and said container for monitoring the pressure existing in said container; a source of pressurizing medium; a source of protective agent; conduit means connecting said pressurizing medium source and said protective agent source to said container; flow control valve means in said conduit means operable for permitting the transfer of said pressurizing medium and protective agent to said container; and central control means operably connected to each of said normally closed valve, pressure responsive means and said flow control valve means for admitting pressurizing medium to said container, said normally closed valve retaining the pressurizing medium in said container at a predetermined pressure, subsequently admitting protective agent to said container to be subjected to pressurization by said medium, and monitoring the response of said pressure responsive means upon admitting of said agent for operating said flow control valve means to closed position upon attaining a rise in pressure in said container of a predetermined amount.

4,281,718

METHOD OF RELEASING A SPRINKLER, AND A SPRINKLER HEAD ADAPTED TO THE METHOD

Lennart Claussen, and Tore Boberg, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed May 16, 1979, Ser. No. 39,525
Claims priority, application Sweden, Nov. 23, 1977, 7713209
Int. Cl.[3] A62C *37/08*
U.S. Cl. 169—41 **6 Claims**



1. A method for releasing a fire-protection sprinkler of the type comprising a sprinkler head in which a frangible element normally prevents escape of the extinguishing medium through the sprinkler head, comprising the steps of:

providing a compacted body of fine, non-explosive particles by compressing separate particles to form a coherent body in which the separate particles retain their identity; and

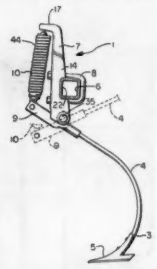
impelling said compacted body into contact with said frangible element upon detection of conditions indicating the presence of a fire, whereby said frangible element is is shattered sufficiently to release said extinguishing medium and said compacted body is substantially entirely disintegrated into particles of such a size that danger due to flying particles is reduced at short distances from the sprinkler head.

4,281,719

SPRING LOADED FIELD CULTIVATOR TOOL SUPPORT

Kenneth A. Hake, and Nelson J. Palen, both of Tipton, Kans., assignors to Kent Manufacturing Co., Inc., Tipton, Kans.

Continuation-in-part of Ser. No. 87,016, Oct. 22, 1979. This application Nov. 13, 1979, Ser. No. 93,399
Int. Cl.[3] A01B *61/04*
U.S. Cl. 172—710 **7 Claims**



1. A shank holder for pivotally connecting the shank of a spring cultivator tool to bracket means on an agricultural tool bar and for operative connection of said shank to tool biasing means for urging the tool toward ground engagement; said shank holder comprising in combination:

(a) an elongated one-piece sheet metal channel-shaped shank holder member having a central web and downwardly depending side flanges;

(b) first pivot means positioned medially along and connecting said holder member to said bracket means; said first pivot means allowing rotation of said holder member with respect to said bracket means about a first transverse horizontal axis of said holder member;

(c) second pivot means connecting said biasing means to said holder member at a location spaced apart from said first pivot means; said second pivot means allowing relative rotation between said biasing means and said holder member about a second transverse horizontal axis of said holder member;

(d) fastening means on a medial portion of said web for fastening said tool shank to said shank holder member such that movement of said shank longitudinally along said holder member is prevented; and

(e) rearward lip portions of said side flanges being folded under said web to define a shank receiving socket; said lip portions being spaced apart from and generally parallel to each other and spaced rearwardly from said fastening means so as to allow access to said fastening means; said socket receiving said shank snugly therein and preventing transverse movement of said received shank relative to said holder member; and

(f) wherein said second pivot means includes:

(a) a pivot pin member;

(b) a pivotal connector member adapted for attaching to said biasing means; said connector member including:

(1) a pair of coaxial trunnions each having an external cylindrical bearing surface thereon and being rotatable about said second axis; and wherein:

(2) said pivot pin member is coaxial with said trunnions and extends outwardly on each side of said pair of trunnions; and wherein:

(g) said holder member includes:

(1) a cutout in the web of said holder member;

(2) said cutout defining a pair of transversely extending side shoulders projecting inwardly from said side flanges and providing clearance for pivoting said connector member with respect to said holder member;

(3) a pair of flange apertures; one of said aperture being

positioned in each of said side flanges respectively and receiving said pivot pin member; said apertures being coaxially aligned; and

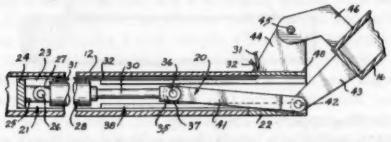
(4) said connector member pivoting on said pivot pin member relative to said shank holder member, each of said trunnion bearing surfaces engaging one of said transversely extending side shoulders respectively, thereby providing a bearing surface between said trunnions and said holder member, whereby additional strength is provided for the pivotal connection between said biasing means and said holder member and whereby said pivot pin member is less likely to wear on said flange apertures thus increasing the life expectancy of said shank holder.

4,281,720

LIFT MECHANISM MOUNTED WITHIN HOLLOW MAIN TOOL BAR AND AUXILIARY TOOL BAR MOVED THEREBY

Arthur Tusing, P.O. Box 64, Dell, Ark. 72426

Filed Aug. 14, 1979, Ser. No. 66,588
Int. Cl.³ A01B *73/00*
U.S. Cl. 172—776 **4 Claims**



1. A lift mechanism mounted within a hollow main tool bar, an auxiliary tool bar, said lift mechanism being used to move said auxiliary tool bar out of axial alignment with said main tool bar, comprising a frame, said frame including a first portion of a size to be received within said main tool bar and a second portion having a cross-sectional configuration generally similar to the configuration of said main tool bar, means for removably attaching said frame to said main tool bar, fluid cylinder means mounted on said first portion of said frame, said fluid cylinder means having piston rod means with a free end extending toward said second portion of said frame, means on said frame for guiding said piston rod means along a path generally axially of said frame, support means carried by said second portion of said frame, means for pivotally mounting said auxiliary tool bar on said support means, said auxiliary tool bar having a tongue with a free end extending into said second portion of said frame when said main and auxiliary tool bars are generally axially aligned, and link means connected at one end to the free end of said piston rod means and connected at the other end to the free end of said tongue, whereby operation of said fluid cylinder means in one direction causes said piston rod means to be extended axially of said main tool bar and said link means causes said auxiliary tool bar to be moved out of axial alignment with said main tool bar.

4,281,721

BULLDOZER BLADE MOUNTING ASSEMBLY

John H. Beales, Langley, Canada, assignor to Beales Steel Products Ltd., Langley, Canada

Filed Dec. 12, 1978, Ser. No. 968,685
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—821 **17 Claims**

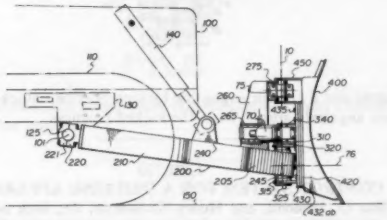
1. A mounting assembly for supporting a scraping tool forward of a vehicle, said assembly comprising:

(a) a generally U-shaped mainframe comprising a forward end extending transversely between two substantially parallel spaced side arm members;

(b) a swingframe;

(c) first pivotal connection means interconnecting said swingframe to the forward end of said mainframe in a location generally forward on said mainframe for enabling limited pivotal rotation on said swingframe in relation to an angling axis of rotation extending upwardly through said forward end substantially equidistant from said side arm members, said first pivotal connection means including a pivot pin extending through said forward end longitudinally along said angling axis;

(d) second pivotal connection means interconnecting said scraping tool to said swingframe in a location forward of said swingframe for enabling limited pivotal rotation of said scraping tool in relation to a tilting axis of rotation extending in a plane substantially transverse to said angling axis of rotation, said second pivotal connection means including a pivot pin extending longitudinally along said tilting axis between said swingframe and said scraping tool, said tilting axis intersecting said scraping tool at a location centrally disposed widthwise of the tool;



(e) tilt actuator means interconnecting said mainframe and said scraping tool for rotating said scraping tool in relation to said swingframe about said tilting axis, said tilt actuator means having a line of action between first and second ends of said tilt actuator means, said first end being pivotally supported at a location fixed in relation to said mainframe away from said tilting axis and substantially on said angling axis, said second end being pivotally supported at a location fixed in relation to said scraping tool disposed towards one side of said scraping tool;

(f) angle actuator means interconnecting said mainframe and said swingframe for rotating said swingframe and said scraping tool in relation to said mainframe about said angling axis; and

(g) support means for supporting said scraping tool in spaced relation with said swingframe while permitting limited rotation of said scraping tool in relation to said swingframe about said tilting axis.

4,281,722

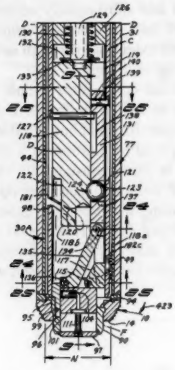
RETRACTABLE BIT SYSTEM

John D. Tucker, Cedar Falls; Ronald E. Cozad, Waterloo, and Robert A. Kaiser, Palmer, all of Iowa, assignors to Long Year Company, Minneapolis, Minn.

Filed May 15, 1979, Ser. No. 39,283
Int. Cl.³ E21B *10/66, 10/02*
U.S. Cl. 175—57 **113 Claims**

4. A drill stem transverse outer barrel assembly comprising an outer barrel having a central axis, an axial outer end, an axial inner end, and an inner peripheral wall, a drill bit drive lug mounted on the outer barrel inner end to extend axially inwardly thereof, a locking sleeve rotatably mounted in the outer barrel and having an axial outer end portion and an axial inner end portion adjacent the outer barrel inner end, said locking sleeve inner end portion having a drill bit engagable locking portion, said outer barrel and locking sleeve having cooperat-

ing means for selectively retaining the locking sleeve in a drill bit engagable locking portion locked position relative the outer



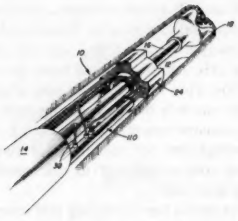
barrel and a drill bit engagable locking portion unlocked position angularly spaced from the locked position.

4,281,723

CONTROL SYSTEM FOR A DRILLING APPARATUS

Tibor O. Edmond, and Henry A. Bourne, Jr., both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Feb. 22, 1980, Ser. No. 123,540
Int. Cl.³ E21B 7/08
U.S. Cl. 175—76 **32 Claims**



1. A deflection and guidance device for a drilling apparatus having a rotatable drill shaft extending from a power source through said device to a drill bit, comprising:

an outer housing affixed to said power source and extending axially therefrom;

an inner ring within said housing, said ring encompassing a portion of said drill shaft;

an intermediate ring disposed between said outer housing and said inner ring and having an inner configuration such that said inner ring is immovable relative to said intermediate ring in a first direction and is prevented from rotating relative to said intermediate ring about an axis parallel to a second direction perpendicular to said first direction, and such that said inner ring is movable relative to said intermediate ring in said second direction, said intermediate ring being movable in said first direction relative to said outer housing and being prevented from rotating relative to said outer housing about an axis parallel to said first direction;

first positioning means adapted to position said intermediate ring relative to said outer housing in said first direction; and

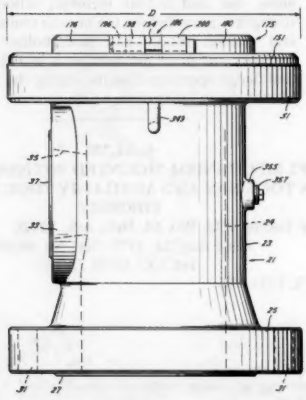
second positioning means adapted to position said inner ring relative to said intermediate ring in said second direction.

4,281,724

DRILLING HEAD

William R. Garrett, Conroe, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 24, 1979, Ser. No. 69,323
Int. Cl.³ E21B 3/04
U.S. Cl. 175—195 **50 Claims**



1. Drilling apparatus comprising:

a stator including a tubular body with a radial flange at the lower end of the body adapted for connection to other drilling apparatus such as a blowout preventer, said stator having above said flange first bearing support means,

said body having above said flange and below said first bearing support means a side flow port through the side wall of said tubular body with pipe connection means about said side flow port for connecting a flow pipe to said stator in communication with said side flow port;

a rotor including a seal tube rotatably disposed in said stator, said tube having a non-circular socket,

said rotor further including drive bushing means having a non-circular outer portion non-rotatably received in said socket and axially upwardly supported by said seal tube, said drive bushing means having an opening adapted to receive a drive tube such as a kelly rotated by a rotary table or the top joint of a drill string rotated by a power swivel,

said rotor further including second bearing support means;

bearing means, carried by said first and second bearing support means, rotatably supporting said rotor by said stator,

head seal means rotatably sealing between an outwardly facing surface of said rotor and an inwardly facing surface of the stator,

said head seal means being below said drive bushing means and below said bearing means and above said side flow port, and

string seal means carried by said seal tube adapted to seal between said seal tube and such drive tube below said head seal,

said string seal means being below such drive bushing means and below said bearing means and extending downwardly into said tubular body to a level adjacent said side flow port,

said bearing means comprising double acting anti-friction axial thrust bearing means concentrated adjacent a single plane transverse to the axis of said tubular body of the stator above said head seal means and string seal means,

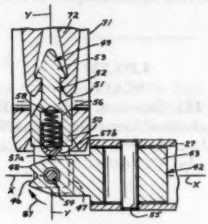
said pipe connection means and the rest of said apparatus lying within the cylindrical geometrical envelope centered on the axis of said bearing means which envelope lies just outside of the outer periphery of said flange.

4,281,725

KNUCKLE JOINT SPEARHEAD CORE DRILLING APPARATUS

Terry M. Runk, Stillwater, Minn., assignor to Longyear Company, Minneapolis, Minn.

Filed Sep. 20, 1979, Ser. No. 77,350
Int. Cl.³ E21B *25/02*
U.S. Cl. 175—246 **14 Claims**



1. For core drilling apparatus that includes a drill stem having a hollow bit end and a latch seat spaced from the bit end, an elongated core barrel inner tube assembly that includes means for collecting a core sample, a latch body connected to the core sample collecting means, detent means mounted by the latch body for movement between a latch seat engaging position and a retracted latch seat release position, release means for operating the detent means between the detent means latch seat engaging position and the latch seat release position, said release means being mounted on the latch body for axial movement relative thereto between an axial inner position that the detent means is extendable into the latch seat to latchingly engage the latch seat and an axial outer position that the detent means is retracted from the latch seat, and overshot coupling means attached to the release means for moving the release means between its positions, said coupling means including a base member, means for joining the base member to the release means, an overshot coupling member and means mounting the coupling member on the base member for movement about an axis transverse to the direction of axial movement of release means between its positions.

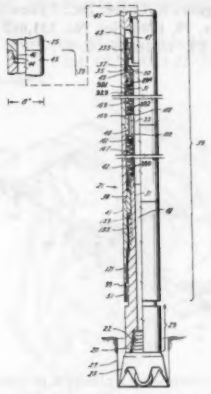
4,281,726

DRILL STRING SPLINED RESILIENT TUBULAR TELESCOPIC JOINT FOR BALANCED LOAD DRILLING OF DEEP HOLES

William R. Garrett, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 14, 1979, Ser. No. 38,674
Int. Cl.³ E21B *17/07*
U.S. Cl. 175—321 **36 Claims**

1. Rotary drill string damper comprising a splined, sealed, tubular, telescopic joint including resilient means increasingly strained upon both extension and contraction of the joint from a neutral position and having a like variable spring modulus upon both extension and contraction with a lowest modulus at the neutral position and nearly as low like moduluses at equal departures from neutral position to both sides of the neutral position over a range of such departures and like gradually and then sharply higher moduluses upon increasing equal departures beyond said range upon further extension and contraction of the damper.

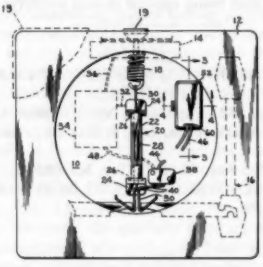


4,281,727

ELECTRONIC SCALE AND BATTERY SUPPORT

Fredrick T. Meeks, Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

Filed Dec. 12, 1979, Ser. No. 102,874
Int. Cl.³ G01G *19/44*
U.S. Cl. 177—128 **3 Claims**



1. In a DC electronic digital platform scale having a base and movable cover thereover, a weight-responsive system in the base with electronic means connected to convert cover movement to a digital weight readout, a switch closed by cover movement activating said means and readout, and a battery supported in the base connectively wired to supply power through said switch and said means to indicate weight, an improvement in the battery support comprising,

an opening through the base to its interior,

a battery receptacle comprising a walled box peripherally supported by and extending totally within said base,

said opening extending through a wall of said box for said wire connection,

matching box cover means coplanar with the plane of said base and latchably securing thereto in said coplanar plane,

said receptacle comprising a single integral molded plastic with said cover being attached thereto with a living hinge,

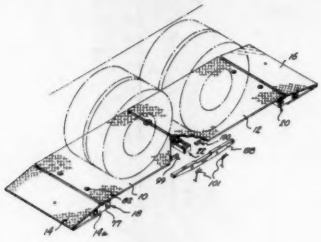
whereby a battery is removably supported and connected in the receptacle within the base and accessible outside the scale through said cover.

4,281,728

VEHICLE PLATFORM SCALE

Allen D. Dickason, Seattle, and R. Laing Hildebrant, Issaquah, both of Wash., assignors to Lodec, Inc., Lynnwood, Wash.

Filed Mar. 19, 1980, Ser. No. 131,665
Int. Cl.[3] G01G *19/02, 3/14*
U.S. Cl. 177—134 **10 Claims**



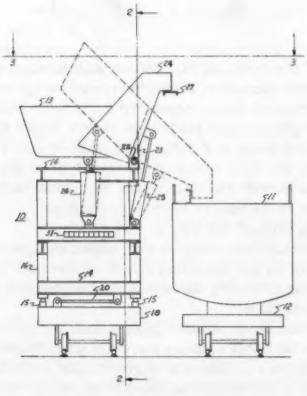
1. A platform scale comprising a platform mounted on a load cell assembly, said load cell assembly including a deflectable load cell, a load cell tray and a pair of bearing rods, said load cell tray including substantially planar, spaced apart bearing rod support means, said load cell including a pair of transverse grooves spaced apart such that said load cell may be mounted in said load cell tray with said bearing rods engaged in said transverse grooves and bearing upon said planar support means for free rotational deflective motion upon downward deflection of said load cell between said bearing rods, said platform being mounted on said load cell assembly such that downward weight loads on said platform are transmitted to said load cell at points intermediate between said transverse grooves, said load cell further including strain transducer means affixed thereto for measuring downward deflection of said load cell upon a weight load being applied to said platform.

4,281,729

MATERIAL WEIGHING AND BUCKET CHARGING APPARATUS

James E. Farley, 8832 Cupid Cir., North Canton, Ohio 44720, and Irvin R. Scarborough, Rte. 3, Box 88A, Andrews, S.C. 29510

Filed Aug. 23, 1979, Ser. No. 68,913
Int. Cl.[3] G01G *19/08, 23/00;* **B67D** *5/64*
U.S. Cl. 177—139 **5 Claims**



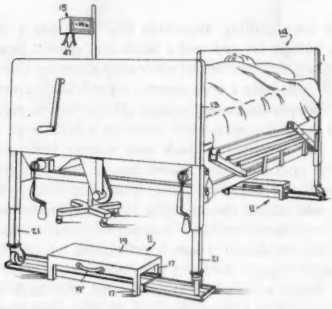
5. In combination: A tiltable hopper supported on a plurality of force transducers for measuring the weight of the hopper and any material charged thereto; a chute designed to close the end of the tiltable hopper in the raised position and to bridge the horizontal space between the hopper and a material receiving bucket laterally disposed thereto in the lowered position; means of supporting the outboard end of the chute and simultaneously restraining the receiving bucket from movement; electromotive means of raising and lowering the chute; electromotive means of tilting the hopper; weight computing, recording and displaying means coupled to the force transducers.

4,281,730

SCALE

Burt L. Swersey, 152 Edgemont Rd., and Peter Fried, 17 Hearthstone Cir., both of Scarsdale, N.Y. 10583

Filed Jan. 15, 1980, Ser. No. 112,224
Int. Cl.[3] G01G *19/52*
U.S. Cl. 177—144 **13 Claims**



1. A scale comprising
a support frame;
a load frame to receive a load thereon;
a pair of displacement transmitting members disposed at opposite ends of said support frame;
a plurality of load flexures, each flexure connecting said load frame to a respective member to transfer the weight of a load on said load frame to said member;
a plurality of support flexures connecting each member to said support frame to permit each member to pivot under an applied weight of a load on said load frame;
a pair of beams arms, each arm being secured to a respective member to pivot about a horizontal axis in response to movement of said load frame;
a pair of springs, each spring being mounted on said support frame and secured to each beam arm to proportionally restrain movement of each respective beam arm relative to said support frame; and
a pair of means mounted on said support frame for emitting a signal corresponding to the displacement of a respective beam arm relative to said support frame.

4,281,731

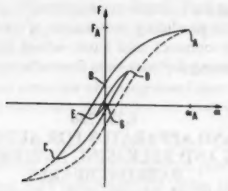
ELECTROMAGNETIC FORCE-COMPENSATING PRECISION WEIGHER WITH DITHER

Walter Södler; Dieter Blawert, both of Göttingen, and Jürgen Ober, Hardegsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Göttingen, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 148,013
Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919227
Int. Cl.[3] G01G *7/00, 3/08*
U.S. Cl. 177—212 **10 Claims**

1. An electromagnetic force-compensating precision weigher, comprising:

a load picking-up device supported by means of metallic resilient joints and vertically movable between stops; and



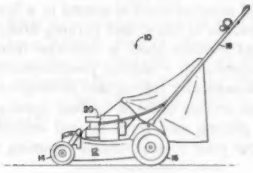
electric means connected with the load picking-up device imposing a slowly dying-out mechanical oscillation upon the load picking-up device and reducing the spring hysteresis of the resilient joints.

4,281,732

TWO-STAGE DEADMAN CONTROL FOR WALK-BEHIND MOWER

John J. Hoch, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jan. 22, 1979, Ser. No. 5,133
Int. Cl.³ B62D *15/04*
U.S. Cl. 180—19 H **4 Claims**



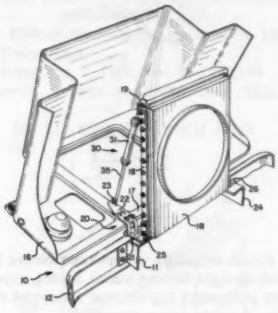
1. In combination with a self-propelled, walk-behind implement having a main frame and an upwardly and rearwardly extending guide handle fixed to the frame, a two-stage control mechanism adapted for operating a normally spring-disengaged traction drive clutch, comprising: a clutch control lever, in the form of a flat bar, adapted for connection to the clutch and pivotally mounted on the handle for movement along a predetermined path between clutch-release and clutch-engage positions; a deadman control lever including a cantilevered spring metal strap bent to form a detent having a ramp at its free end, the deadman control lever being pivotally mounted on the handle for movement between a lever-release position, wherein the spring metal strap is clear of said path, and a lever-holding position wherein the ramp of the spring metal strap is disposed in the path and blocks movement of the clutch control lever from its clutch-engage position, whereby the clutch control lever may be moved to its clutch-engage position after the deadman control lever is moved to its lever-holding position by engaging the ramp and deflecting the spring metal strap; and biasing means connected between the handle and the deadman control lever and urging the latter towards its lever-release position.

4,281,733

MOTOR TRUCK HOOD OPENING DAMPER RESTRAINT

James Miller; Walter E. Eifrid, and Jay P. Hacker, all of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Sep. 17, 1979, Ser. No. 76,109
Int. Cl.³ B62D *25/10*
U.S. Cl. 180—69 C **4 Claims**



1. A motor truck hood opening damper restraint, comprising:

a motor truck frame;

a motor truck hood;

a hood hinge means having a stationary part mounted on the frame and a swingable part swingable about a hinge axis mounted to a lower forward inside portion of the hood for tilting the hood forwardly and downwardly from a closed position to an open position;

an upright beam means having a lower end fixed to the frame; and

a hydraulic dampening means having a cylinder pivotally mounted at one end to an upper end of the upright beams means and a piston slidably mounted in the cylinder and having a piston rod extending axially outwardly from a second end of the cylinder and pivotally connected to the swingable part of the hinge means and swingable therewith, the cylinder and piston rod extending substantailly vertically in the closed position of the hood, the cylinder partially filled to a predetermined level with a hydraulic fluid and the piston rod holding the piston above the predetermined level of hydraulic fluid in the closed position of the hood, the partially filled cylinder permitting unrestricted speed of travel of the hood up to an overcenter balance point of the hood with respect to the hinge axis at which point the piston rod swinging with the swingable part of the hinge means pulling the piston downwardly into the hydraulic fluid at the predetermined level and restricting the speed of travel of the hood forwardly past the overcenter balance point to the fully opened position.

4,281,734

MULTI-FUNCTION CONTROL SYSTEM

Gary D. Johnston, 1801 Arcineiga, Clovis, N. Mex. 88101

Filed Oct. 29, 1979, Ser. No. 89,194
Int. Cl.³ B62D *1/24, 11/04*
U.S. Cl. 180—167 **2 Claims**

1. An apparatus for controlling the direction and speed of a vehicle in response to head movements of an operator, comprising in combination;

a mirror for mounting on the head of the operator;

a housing;

means for atttaching the housing to the vehicle, the housing forming an opening facing toward the mirror when the head of the operator is in the normal forward position;

a light source within the housing for shining substantially perpendicular to the mirror when the head of the operator is in the normal forward position;

means within the housing for sensing the light reflected by the mirror, for responding to the different components of movement of the mirror, and providing command signals operatively related to the particular directional components of movement of the mirror; and

a control circuit including an input responsive to the output signals of the light sensing means, means responsive to the input for processing signals, and an output responsive to the means for processing signals;

wherein the control circuit output signals provide the signals for controlling the direction and speed of the vehicle.

4,281,735

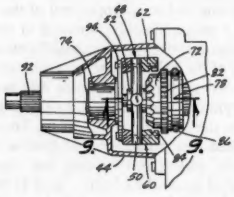
APPARATUS AND METHOD FOR CONVERTING A FULL-TIME FOUR-WHEEL DRIVE TRANSFER CASE FOR PART-TIME OPERATION

Greg T. Sloma, 1206 S. 116th Ave., Omaha, Nebr. 68144

Filed Sep. 26, 1979, Ser. No. 79,071

Int. Cl.³ B60K *17/34*

U.S. Cl. 180—247 **5 Claims**



1. A method of converting a full-time four-wheel drive transfer case for part-time four-wheel drive operation wherein said transfer case includes a housing, forward input shaft rotatably supported within said housing and having a front wheel drive gear rotatably supported thereon, a rearward output shaft rotatably supported in said housing and having a rear wheel drive gear secured thereon, a differential assembly interconnecting said input and output shafts and including a cross mounted on a rearward portion of said input shaft for rotation therewith, a plurality of spider gears rotatably carried on said cross and disposed in engagement with said front and rear wheel drive gears, and an annular spider housing surrounding said cross and secured thereto for rotation therewith, a sliding lock clutch slidable on said input shaft and connected to said front wheel drive gear for rotation therewith, said spider housing and sliding lock clutch including coacting gear means which are selectively engageable and disengageable in response to sliding movement of said lock clutch to respectively couple and uncouple said front wheel drive gear and spider housing,

said method comprising the steps of

removing said rearward output shaft and spider gears, connecting a substitute rearward output shaft means to said annular spider housing for full-time rotation in unison, whereby said coacting gear means of said spider housing and sliding lock clutch are engageable and disengageable in response to sliding movement of said lock clutch to selectively connect said front wheel drive gear to said spider housing for part-time four-wheel drive operation.

4,281,736

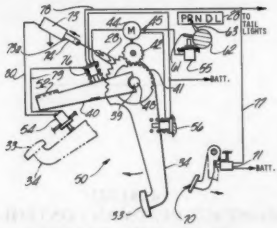
METHOD AND APPARATUS FOR AUTOMATICALLY APPLYING AND RELEASING AUTOMOTIVE TYPE PARKING BRAKES

Vincent P. Lizzio, 45 Moorland Dr., Grosse Pointe Shores, Mich. 48236

Filed Apr. 16, 1979, Ser. No. 30,695

Int. Cl.³ B60K *41/26*

U.S. Cl. 180—271 **12 Claims**



5. In combination in a vehicle equipped with a transmission and a selector lever for said transmission, a parking brake having a brake pedal arm and a service brake, an apparatus for automatically applying the parking brake on said vehicle when the transmission thereof is placed in a first predetermined position, said apparatus including means activated by said selector lever to cause said parking brake to be automatically applied when said selector lever is placed in a first predetermined position, means to cause said parking brake to remain applied when said selector lever is removed from said first predetermined position to a second predetermined position, and means to automatically release said parking brake of said vehicle when said service brake is applied simultaneously or subsequently to placing said lever in said second predetermined position, but prior to said vehicle resuming motion.

4,281,737

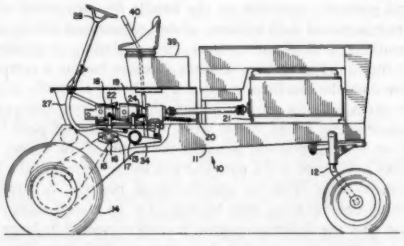
BRAKING AND SPEED CONTROL SYSTEM

Herbert W. Molzahn, Hamilton, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,982

Int. Cl.³ B60K *41/26*

U.S. Cl. 180—307 **2 Claims**



1. A vehicle comprising:

a frame;

a pair of drive wheels supporting said frame;

a pair of hydrostatic drive units respectively for each of said drive wheels including a variable displacement pump and a hydraulic motor driven thereby and a control arm pivoted on each pump for varying the output thereof to its respective motor;

pump speed control means operatively associated with both of said control arms for effecting simultaneous movement thereof in the same direction between neutral and forward positions;

a manually operated speed control lever pivoted on said frame and having forward and neutral positions;

means associated with said frame for fixing said speed control lever in a selected forward position;

first spring-biased lost motion connecting means interconnecting said pump speed control means and said speed control lever in such a manner that said pump speed control means is normally biased to a forward speed position upon said speed control lever being in a forward position;

brake means associated with said drive wheels for effecting simultaneous braking thereof, said brake means including a manually operated brake control linkage operatively associated therewith;

an override link interconnecting said brake control linkage and said pump speed control means, said override link having a second lost motion connection with said pump speed control means so disposed that upon said brake control linkage being in a normal unbraked position, said second lost motion connection permits said pump speed control means to operate unhindered throughout its entire range of positions in response to operator movement of said speed control lever and upon said brake control linkage being actuated to brake said drive wheels with said speed control lever fixed in a forward position, said pump speed control means is returned to its neutral position overcoming said first spring-biased lost motion connection.

4,281,738

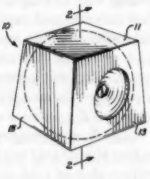
SPHERICAL LOUDSPEAKER ENCLOSURE

Michael Jackson, 4524 N. 35th Pl., Phoenix, Ariz. 85018

Continuation of Ser. No. 896,695, Apr. 17, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 107,153

Int. Cl.³ H05K *5/00*

U.S. Cl. 181—151 **8 Claims**



1. An enclosure and loudspeaker combination comprising a molded foamed plastic shell having a hollow interior, the inner surface of which is porous and each cross section of which is a continuous curve, and having an aperture therethrough for mounting a loudspeaker of complementary dimensions to the dimensions of such aperture; and means for attaching said loudspeaker in said aperture to seal said aperture; the diameter of said loudspeaker and its limits of mechanical excursion being matched to the volume V of the interior of said shell according to the formula:

$$V=[MD]^3$$

where M is the distance between the limits of the mechanical excursion of the diaphram of said loudspeaker and D is the diameter of the loudspeaker; so that pressure changes caused by excursions of the diaphram of said loudspeaker are equalized on the interior of said shell.

4,281,739

DAMPING BODY FOR MACHINE SUPPORT ARRANGEMENTS

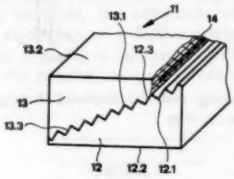
Emil Keiser, Ebikon, Switzerland, assignor to Inventio AG, Hergiswil, Switzerland

Filed Apr. 7, 1980, Ser. No. 138,154

Claims priority, application Switzerland, May 18, 1979, 4654/79

Int. Cl.³ F16F *7/00;* **F16M** *11/24*

U.S. Cl. 181—207 **3 Claims**



1. A damping body for machine support arrangements comprising:

at least two superimposed substantially wedge-shaped partial bodies formed of elastic damping material and defining two substantially parallel and mutually oppositely situated support surfaces respectively serving for supporting a machine mount base and bearing upon a machine pedestal;

said wedge-shaped partial bodies containing separation surfaces, dispositioned in nonparallel relationship with respect to said support surfaces;

said wedge-shaped partial bodies being shiftable relative to one another along said separation surfaces in the unloaded condition of said damping body; and

at least one of said partial bodies being provided with a metallic plate member embedded in said elastic damping material in a position substantially parallel to said support surfaces defined by said wedge-shaped partial bodies of the damping body, to dampen or reflect sonic energy.

4,281,740

MUFFLER

William R. Weiss, Walnut Creek, Calif., and Lee E. Remy, Colonial Heights, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 9, 1979, Ser. No. 55,729

Int. Cl.³ F01N *1/04*

U.S. Cl. 181—250 **13 Claims**

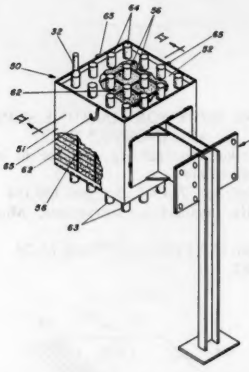
1. A muffler for use in conjunction with a plurality of aspirator exhaust tubes during the production of multiflament synthetic yarn, said muffler comprising:

a. a housing;

b. a partition located within and subdividing said housing into a plurality of discrete chambers;

c. a plurality of perforated tubes through which the yarn travels, one per said chamber, which passes through said chamber to communicate with the exterior or said hous-

ing, each of said tubes forming in conjunction with said partition and said housing a resonant cavity; and



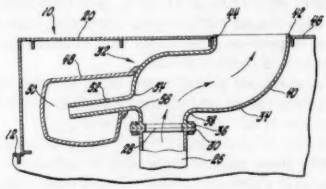
d. sound absorbing material disposed throughout each of said resonant cavities.

4,281,741

COMPACT EXHAUST SILENCER FOR DIESEL LOCOMOTIVES

Dwight A. Blaser, Sterling Heights, Mich., and David J. Goding, Willow Springs, Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1979, Ser. No. 80,475
Int. Cl.³ F01N *1/02*
U.S. Cl. 181—250 **5 Claims**



1. A compact exhaust silencer for use with diesel locomotives of the type having a single elongated exhaust outlet with limited clearance space from the outlet to the locomotive body wall, said silencer comprising;

a mounting base connectable to the exhaust outlet and defining an opening of greater length than width,

a close coupled duct member with two oppositely curving sharply angled bends extending from said base to an outlet opening spaced axially from the base and to one side thereof in the direction of the narrow sides of the base, said duct bends providing broadband reduction of high frequency exhaust noise by forming an indirect path for sound propagation to the outlet,

a compact Helmholtz resonator chamber disposed along the side of said duct opposite to said one side toward which the outlet is offset, and

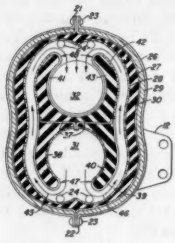
a connector pipe opening through said opposite duct side near the base and extending into said chamber in a direction generally opposite the direction of offset of the main duct to encompass a mass of gas tuned to the volume of said chamber to dampen exhaust noise at a desired frequency for maximum silencing effect under predetermined operating conditions.

4,281,742

SILENCER FOR EXHAUST GASES

Albert Scheuermann, Bad Mergentheim, and Henning Adickes, Heidelberg, both of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Mar. 10, 1980, Ser. No. 128,823
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930775
Int. Cl.³ F01N *1/10*
U.S. Cl. 181—257 **10 Claims**



1. A silencer for handling the flow of exhaust gases from an engine which comprises:

(a) a tubular housing having an absorption section with an inlet and an outlet opening communicating therewith, said absorption section comprising an outside wall, a middle wall and a perforated inside wall with a layer of heat insulating material positioned between said outside wall and said middle wall and a layer of sound absorption material positioned between said perforated inside wall and said middle wall;

(b) two symmetrical members aligned parallel to each other within said absorption section, each of said members having an inner wall and an outer wall with a layer of sound absorption material positioned therebetween;

(c) attachment means for joining said two symmetrical members together approximately at their midpoints thereby forming a hollow tubular inlet connector and a hollow tubular outlet connector, said hollow tubular inlet connector having an axis aligned parallel to both the axis of said hollow tubular outlet connector and to the axis of said absorption section, said inlet connector communicating with said inlet opening and having a longitudinally extending slot provided therein, said outlet connector communicating with said outlet opening and having a longitudinally extending slot provided therein aligned opposite said longitudinal slot in said inlet connector; and

(d) two separate flow passages formed by the inside wall of said absorption section and the outer walls of said inlet and outlet connectors, said flow passages connecting said longitudinally extending slot of said inlet connector to said longitudinally extending slot of said outlet connector for directing the flow of said exhaust gases therebetween.

4,281,743

INSULATING ENCLOSURE FOR DISAPPEARING STAIRWAY

George C. Fuller, 905 Brookfield Pkwy., Roswell, Ga. 30075

Filed Nov. 23, 1979, Ser. No. 97,035
Int. Cl.³ E06C *9/08*
U.S. Cl. 182—46 **10 Claims**

1. A knockdown enclosure for insulating a pull-down stairway of the type set in a ceiling, comprising:

a generally rectangular box having a closed top, an open bottom, and closed sides and ends and dimensions of length and width sufficient to fit over and enclose an air space over the pull-down stairway from above the ceiling; said box comprising a number of box segments that fit to-

gether with overlapping joints so as to reduce heat transfer through the joints; and

said box segments being made of material that is a good thermal insulator so as to minimize heat transfer through the box between the air space and the surrounding space above the ceiling.

4,281,744

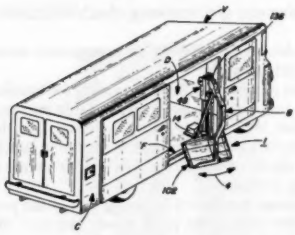
ROTARY WHEELCHAIR LIFT APPARATUS

Charles F. Koerber, 8905 Mentor Ave., Mentor, Ohio 44060

Filed Mar. 8, 1979, Ser. No. 18,640

Int. Cl.³ B66B *9/20*

U.S. Cl. 187—9 R **4 Claims**



1. A rotary wheel chair lifting apparatus for lifting a user into and out of a vehicle of the type having a side door opening, such as a van, recreational vehicle, or the like, the lifting apparatus including:

a support column adapted to be mounted adjacent said door opening;

said support column constructed to have a polygonal cross-sectional configuration;

a drive means for rotating said support column about a vertical axis, including a drive motor with drive gear means driving a gear means attached adjacent the lower end of said support column;

a carriage assembly mounted for rolling engagement on said support column,

the carriage assembly including a carriage member having at lease two oppositely disposed generally V-shaped rollers, each roller engaging two adjacent surfaces of said support column;

the V-shaped rollers being of a configuration and location within said carriage member as to control;

a frame structure including a support platform mounted on said carriage assembly for receiving a wheelchair;

a drive screw means for raising and lowering said support platform platform in a vertical direction including an elongated screw member disposed in driven relationship with a screw drive motor attached to the upper end of said screw member, and a threaded engaging portion attached to said support column and said carriage assembly for raising and lowering said support platform upon actuation of said screw drive motor;

said support platform having a forward stop means including a resiliently biased support member adapted for recriprocal movement upon engagement with wheels of said wheelchair;

said support platform having a rear stop means including a hinged stop operably associated with a cable and pulley means for the automatic raising and lowering of said stop means upon raising and lowering of said frame structure,

a control means on the frame for actuating the vertical and pivotal motion of said apparatus;

the V-shaped roller include a means by which engagement between the rollers and said support column may be adjusted thereby establishing play between said support column and said carriage member, and an adjustment screw threadably connected to one axle of the V-shaped roller, the axle protruding through slots in opposing roller mounting block surfaces and having bearing surfaces engaging the slots, the adjustment screw protruding through an aperture in a further carriage member face threadable engaging a tightening means such as a nut whereby the adjusting means is caused to move.

4,281,745

BRAKE DISK FOR DISK BRAKES ON A RAIL VEHICLE

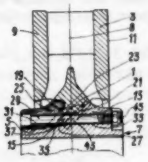
Xaver Wirth, Ismaning, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 6, 1979, Ser. No. 27,883

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828101

Int. Cl.³ F16D *65/12*

U.S. Cl. 188—218 XL **16 Claims**



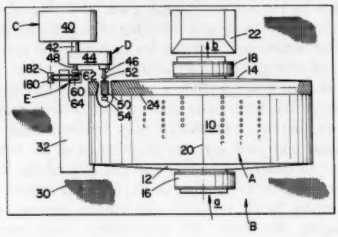
1. A brake disk for a disk brake on a rail vehicle comprising a hub having a first conical annular surface inclined at an angle of substantially 45° to a radial plane of said hub, a retainer ring positioned upon said hub and having a fourth conical annular surface inclined at said angle and said fourth conical annular surface spaced from said first conical annular surface, and annular braking element having at its inner peripheral portion a flange ring having second and third axially spaced parallel conical annular surfaces each inclined at said angle, and fastener means interconnecting said retainer ring and a portion of said hub to clamp said flange ring therebetween such that said first and third conical annular surfaces engage each other and said second and fourth conical annular surfaces engage each other but said flange ring is free of engagement with said hub, said flange ring being clamped against axial movement but capable of radially outward movement along the engaging conical surfaces because of any thermal expansion of the annular braking element while maintaining the centering of the annular braking element with respect to the hub.

4,281,746

INCHING DEVICE

Wallace N. Thomas, Bay Village, Ohio, assignor to Pickands Mather & Co., Cleveland, Ohio

Filed Apr. 9, 1979, Ser. No. 28,069
Int. Cl.[3] B60K 67/00
U.S. Cl. 192—3 R 16 Claims



1. A hydraulic inching device for a grinding mill of the type having a grinding drum journalled for rotation about its longitudinal axis and drive means operably connected to said drum through a drive train for obtaining the desired rotation, said inching device comprising:

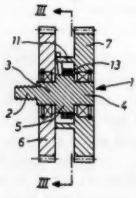
a hydraulic motor having a rotatably driven output shaft including means for allowing selective coaxial coupling thereof to a shaft in said drive train for selectively rotatably driving said drum in place of said drive means at a reduced rate of speed; a brake assembly operably associated with said hydraulic motor output shaft and which may be selectively placed in braking and non-braking conditions therewith for maintaining said drum in a predetermined rotated position; and, said brake assembly being controlled in a manner such that it may only be moved to said non-braking condition in response to hydraulic fluid charge pressure being supplied to said motor.

4,281,747

OVERRIDE LOCK ASSEMBLY FOR A DRIVING MEANS

Fritz Knobel, Ennenda, and Gerhard Kuhn, Glarus, both of Switzerland, assignors to Ortopedia GmbH, Kiel, Fed. Rep. of Germany

Filed Oct. 31, 1978, Ser. No. 956,991
Claims priority, application Switzerland, Nov. 4, 1977, 13472/77
Int. Cl.[3] B60T 7/12
U.S. Cl. 192—8 C 2 Claims



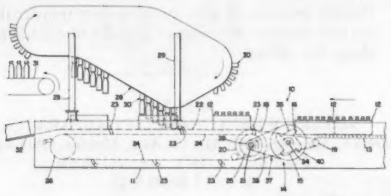
1. In an override lock assembly for a driving means, comprising a driving element means and a driven element means each including an unmovably arranged entraining means and being rotatably arranged side by side on a common fixed shaft means, an improvement comprising: a coiled coupling spring means wound around said shaft means being arranged between said driving element means comprises bent end sections extending laterally of said coiled spring and forming integral leg means, whereby said entrainment means of said driven element means, extends between said leg means and said entrainment means of said driving element means overlaps said leg means such that, upon a synchronous relative movement of said driving element means and said driver element means, said coiled spring means moves freely together with such movement and said coiled spring means is positively positioned towards said fixed shaft means to thereby brake and decelerate said driving element means in response to unsynchronous movement between said driven element means and said driving element means.

4,281,748

INDEXING AND SYNCHRONIZING CLUTCH MECHANISM

Michael E. Winiasz, 4009 Washington Ave., Lorain, Ohio 44052

Filed Jul. 20, 1979, Ser. No. 59,489
Int. Cl.[3] F16D 11/00
U.S. Cl. 192—28 15 Claims



1. An indexing and synchronizing clutch mechanism which comprises:

a rotatable drive wheel having an engagement means;

a rotatable driven shaft;

a pawl means mounted on the driven shaft for rotation therewith, the pawl means also being movable into and out of engagement with the engagement means on the drive wheel whereby the driven shaft is rotated in synchronization with the drive wheel, the pawl means having a pair of projecting portions;

actuatable means capable of engaging one of the projecting portions for moving the pawl means into and out of engagement with the drive wheel; and

a fixed stop mounted adjacent to the drive wheel and adapted to engage the other of the projecting portions and to prevent rotation of the pawl means and hold the position of the pawl means when it is moved out of engagement with the drive wheel by the actuatable means whereby the driven shaft is securely held in an indexing position and is incapable of rotation.

4,281,749

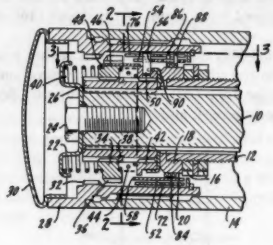
AUTOMATIC LOCKING CLUTCH

Mark J. Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 868,587, Jan. 11, 1978, abandoned. This application Apr. 5, 1979, Ser. No. 27,347
Int. Cl.[3] F16D 11/00; B60K 17/34
U.S. Cl. 192—36 51 Claims

1. In a clutch for effecting engagement between rotatable driving and driven members in response to rotation of the driving member, said clutch incorporating first and second clutching means respectively rotatable with said driving and driven members, said first clutching means being movable relative to said driving member into and out of engagement with said second clutching means, means yieldably biasing said first clutching means away from engagement with said second clutching means, and actuating means for said clutch; the improvement wherein said actuating means comprises rotatable cam means, means responsive to rotation of said driving member for developing a relatively high force tending to retard rotation of said cam means when said clutching means

are out of engagement and a relatively low force tending to retard rotation of said cam means when said clutching means are in engagement, means for rotating said cam means in opposition to said relatively high force and moving said first clutching means toward engagement with said second clutching means in response thereto, and means for rotating said cam means in opposition to said relatively low force.

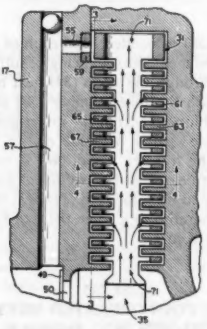


4,281,750

FLUID COUPLING DEVICE HAVING IMPROVED RESPONSE TIME

Stephen M. Clancey, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 21, 1979, Ser. No. 13,578
Int. Cl.³ F16D *35/00, 43/25*
U.S. Cl. 192—58 B **13 Claims**



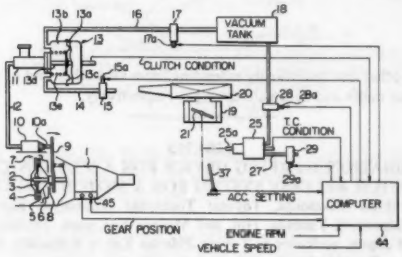
1. A fluid coupling device comprising a first rotatable coupling assembly defining an axis of rotation, enclosure means associated with said first rotatable coupling assembly to define a fluid chamber therebetween, valve means associated with said first rotatable coupling assembly and disposed to separate said fluid chamber into a fluid operating chamber and a fluid reservoir chamber, a second rotatable coupling member disposed in said fluid operating chamber and being rotatable relative to said first rotatable coupling assembly, said valve means being operable to control the flow of fluid between said reservoir and said operating chamber, and including means associated with said valve means to effect the operation thereof in response to variations in a predetermined condition, said second coupling member including a hub portion and a disc-like portion, said disc-like portion having first and second axially-spaced surfaces, said first surface cooperating with the adjacent surface of said first coupling assembly to define a first viscous shear space, said second surface cooperating with with the adjacent surface of said first coupling assembly to define a second viscous shear space, said disc-like portion defining at least one fluid passage communicating between the inner radial periphery of said disc-like portion and the outer radial periphery thereof, said fluid passage communicating at least intermittently with each of said first and second viscous shear spaces over at least a major portion of the radial extent of said shear spaces, said first viscous shear space and said second viscous shear space being substantially uninterrupted by said fluid passage.

4,281,751

AUTOMATIC GEAR SHIFTING METHOD

Masaaki Suga, Yokohama; Chiaki Kobayashi, Yokosuka, and Hisaaki Tohzima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1979, Ser. No. 23,557
Claims priority, application Japan, Apr. 17, 1978, 53-44134
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—0.092 **4 Claims**



1. An automatic gear shifting method in a motor vehicle including an engine with a throttle valve operatively connected to an accelerator pedal, a manual gear box and a clutch operatively disposed between the engine and the gear box, said method being carried out with the accelerator pedal kept depressed to a depression degree and comprising the following steps when the setting of the throttle valve is wider than a predetermined opening degree:

a step of initiating closing movement of the throttle valve independently of the accelerator pedal from an initial opening degree which corresponds to said depression degree of the accelerator pedal to a closed position;

a second step of disengaging the clutch when a predetermined time has passed after the occurrence of said first step;

a third step of shifting into a gear in the manual gear box after the initiation of said second step;

a fourth step of initiating return movement of the throttle valve to said initial opening degree which corresponds to said depression degree of the accelerator pedal;

a fifth step of reengaging the clutch.

4,281,752

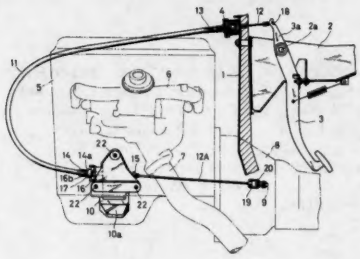
MECHANICAL CLUTCH RELEASE SYSTEM

Hiroshi Kato, and Yasuhiro Morita, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 3, 1979, Ser. No. 54,651
Claims priority, application Japan, Mar. 22, 1979, 54-37017[U]
Int. Cl.³ F16D *23/12*
U.S. Cl. 192—99 R **4 Claims**

1. In an automobile having an engine rearwardly connected to a clutch housing containing a clutch release fork therein and a clutch pedal, a system for releasing a clutch through clutch cables, said clutch cables comprising an outer cable comprised of a thermofusible material and being located forwardly of an exhaust pipe of said engine and an inner cable extending longitudinally through said outer cable, said outer cable being secured to the body of said automobile at one end and at the other end to a portion of said engine located forwardly of said exhaust pipe, and said inner cable being connected to said

clutch pedal and to said clutch release fork at one end rearwardly extending from said one end of said outer cable and at



the other end rearwardly extending from said other end of said outer cable and said exhaust pipe, respectively.

4,281,753

VIBRATION DAMPING DEVICE FOR A MECHANICAL CLUTCH RELEASE SYSTEM FOR A MOTOR VEHICLE

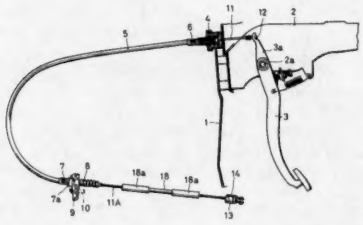
Kazuhiko Takemoto, Toyota; Toshiyuki Ninomiya, Kariya; Shigemichi Yamada, Hoi, and Minoru Yukiyasu, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jul. 12, 1979, Ser. No. 57,074

Claims priority, application Japan, Mar. 22, 1979, 54-37016[U]

Int. Cl.³ F16D *19/00*

U.S. Cl. 192—99 S **6 Claims**



1. Apparatus for damping vibrations in a motor vehicle having a body, an engine, an exhaust pipe, a clutch pedal, and a clutch release fork comprising:

an outer clutch cable mounted at one end to the body of said motor vehicle, and mounted at the other end to the engine, forward of the exhaust pipe;

an inner clutch cable, partially enclosed within said outer cable, mounted at one end to said clutch pedal and mounted at the other end to said clutch release fork, and having an exposed portion extending from said clutch release fork to said other end of said outer cable;

a vibration damping device comprising a cylindrical damper of high flexural rigidity, enclosing at least a portion of, and being secured to, said exposed portion of said inner cable.

4,281,754

SILO UNLOADING CHUTE

Nicholas J. Seay, Madison, Wis., assignor to Midwest Silo Company, Boscobel, Wis.

Filed Feb. 8, 1980, Ser. No. 119,802

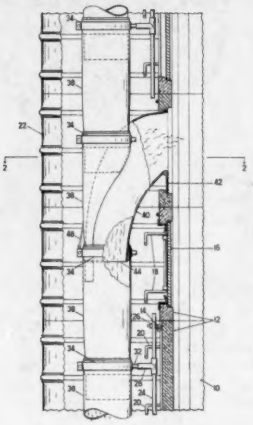
Int. Cl.³ B65G *11/02*

U.S. Cl. 193—34 **9 Claims**

1. In a silo **(10)** having provided therein a vertically aligned series of doors **(16)** and having an access chute **(22)** secured thereto providing access to the doors **(16)**, the silo unloading chute comprising:

a plurality of vertically spaced and aligned hoops **(34)** positioned in the access chute **(22)**, each of the hoops **(34)** being associated with a one of the doors **(16)** in the silo **(10)**;

a transfer funnel **(40)** shaped so as to fit within a one of the doors **(16)** in the silo **(10)** at one end thereof and so as to extend into the hoop **(34)** associated with said door **(16)** at the other end thereof; and



a tube member **(38)** suspended from each of the hoops **(34)**, each of the tube members **(38)** being of sufficient length so as to extend through the hoop **(34)** next below the hoop **(34)** from which the tube member **(38)** is suspended, of sufficient flexibility to permit the lower portion thereof to be pushed aside against one side of the hoop **(34)** next below when the transfer funnel **(40)** is inserted into the hoop **(34)** next below, and of sufficient resiliency to bellow outwardly to fill said hoop **(34)** next below to inhibit dust leakage therethrough when the transfer funnel **(40)** is removed therefrom.

4,281,755

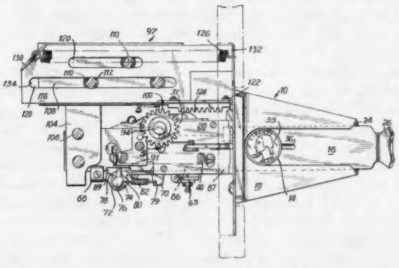
REPEATING COIN-OPERATED MECHANISM

Stanley D. Levine, Melville, N.Y., assignor to U.S. Billiards, Inc., Amityville, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,796

Int. Cl.³ G07F *5/02*

U.S. Cl. 194—1 J **14 Claims**



1. A coin-operated mechanism for use in association with a device to enable said device to be activated a predetermined number of times, at least twice, in response to a deposit of a predetermined amount of coinage, said coin-operated mecha-

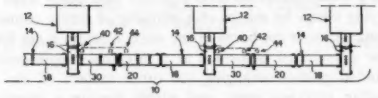
nism comprising a housing, a coin slide mounted for reciprocal inward and outward movement relative to said housing and arranged to activate said device upon reaching a predetermined, internally extended position with respect to said housing, a latching mechanism mounted in said housing to engage said coin slide and prevent said coin slide from reaching said predetermined, internally extended position unless proper coinage is deposited into said coin slide and latch inhibiting means arranged in said housing for preventing said latching mechanism from engaging said coin slide after the initial deposite of coinage and inward movement of said coin slide to said predetermined, internally extended position, said latching mechanism being prevented from engaging the coin slide until said coin slide has been reciprocated said predetermined number of times.

4,281,756

DISTRIBUTING CONVEYOR INSTALLATION AND CONTROL METHOD THEREFOR

Carlo L. Bruno, Oundle, England, assignor to Alisyncro S.a.s. di Bruno & C., Leini, Italy

Filed Jan. 29, 1980, Ser. No. 116,380
Claims priority, application Italy, Feb. 12, 1979, 67291 A/79
Int. Cl.³ B65G *48/03, 43/10*
U.S. Cl. 198—356 **5 Claims**



5. A method of controlling a distributing conveyor installation provided with a principal line of conveyance from which products being transported therealong can be removed at a plurality of spaced locations, said principal line of conveyance comprising, between each said removal location, a haltable two-speed accumulation conveyor followed by an associated step-advance conveyor advanceable at two different frequencies, said control method comprising the operations of:

monitoring the said principal line of conveyance in correspondence with the loading and discharge ends of each accumulation conveyor, and the loading end of each step-advance conveyor in order to detect the presence of products thereon,

unless otherwise controlled, causing each accumulation conveyor to move at its fast speed and its associated step-advance conveyor to advance intermittently at its high frequency,

causing a said accumulation conveyor to move at its slow speed and its associated step-advance conveyor to advance at its low frequency when the presence of a product is detected at the loading end of that step-advance conveyor in the stop period comprised between two successive step movements of the step-advance conveyor,

causing a said accumulation conveyor to stop when, during the operation of its associated step-advance conveyor at its low frequency, the presence of products is detected both at the discharge end of the accumulation conveyor and at the loading end of the step-advance conveyor in the stop period comprised between two successive step movements of the step-advance conveyor, and

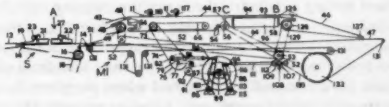
causing the accumulation conveyor associated with the transverse conveyor next upstream to change from its fast to its slow speed and the corresponding step-advance conveyor to change from its high to its low frequency of advance when, during operation of a said step-advance conveyor at its low frequency the presence of products is detected at the loading end of that step-advance conveyor and at the loading and discharge ends of the associated accumulation conveyor in the stop period comprised between two successive step movements of the s.ep-advance conveyor.

4,281,757

APPARATUS FOR FEEDING ARTICLES TO PACKAGING MACHINES

David C. Morton, Harrogate, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Aug. 9, 1979, Ser. No. 65,152
Claims priority, application United Kingdom, Sep. 6, 1978, 35836/78
Int. Cl.³ B65G *47/51*
U.S. Cl. 198—358 **6 Claims**



1. Apparatus for feeding a plurality of packaging machines with a procession of articles disposed in end-on orientation in rows on an output conveyor from a producing machine, comprising:

a continuously moving conveyor providing a feed path for said articles and aligned with said output conveyor;

a plurality of feed modules spaced in succession along the feed path and including intakes offset laterally with respect to one another to enable each of the feed modules to accept a different row of articles of a cross conveyor associated with each feed module and operative to feed the articles in the associated row to an individual packaging machine in a direction transverse to the feed path;

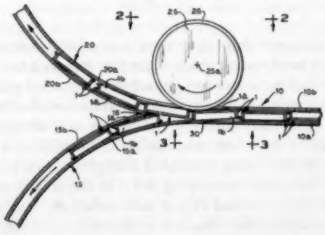
each feed module including a continuously moving inclined pick-up conveyor for lifting articles in the associated row from the feed path, a continuously moving transfer conveyor including at its delivery end a nose portion extending over the associated cross conveyor, means operative only when the associated packaging machine is in operation for periodically retracting said nose portion to allow articles to fall from said transfer conveyor onto said cross conveyor, and a continuously moving inclined by-pass conveyor for returning articles from the delivery end of said transfer conveyor to the feed path in the event of non-retraction of said nose portion.

4,281,758

HIGH-SPEED CLOSURE ORIENTING APPARATUS

Richard T. Adamski, Lambertville, Mich., and Samuel J. Kowal, Maumee, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 30, 1979, Ser. No. 89,698
Int. Cl.³ B65G *11/20, 47/24*
U.S. Cl. 198—398 **2 Claims**



1. Apparatus for orienting cup shaped caps moving at high

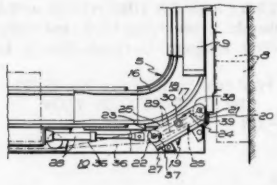
speed in side by side rolling relationship so that all caps have their recessed sides facing the same direction, each said cap having a disc-shaped panel portion and a peripheral wall defining a recess, comprising a first chute guiding the moving caps in non-oriented relationship, said first chute having a pair of spaced walls respectively guiding the panel portion and the peripheral wall of the inserted caps, a second and a third chute respectively connecting in a Y-shaped juncture with the end of said first chute, the outer wall of said second chute constituting a continuation of one wall of said first chute and the outer wall of the third chute constituting a continuation of the other wall of said first chute, the inner walls of said second and third chutes joining in a sharp vertex disposed in alignment with the lateral center of said first chute, the juncture area of said one wall having an elongated slot therein, a rotating discriminator wheel having a cylindrical rim portion entering said slot, said cylindrical rim portion having an elastomeric surface and being proportioned to impart a compressive force on each successive cap entering the chute juncture area from said first chute, the chute wall opposite said wheel periphery having an aperture therein to permit only a trailing segment of a cap rim to be depressed therein, said aperture being circular and having its axis passing through the axis of rotation of said discriminator wheel, and said vertex is spaced from said axis by the diameter of the caps whereby caps having their recessed sides facing toward the wheel are shifted toward the wheel axis, hence into said second chute, while caps having their recessed sides facing away from the wheel are moved by the wheel into said third chute.

4,281,759

CONVEYORS

Gerald R. O. Pentith, Hoyland Nether nr. Barnsley, England, assignor to Pitcraft Summit Limited, Hoyland Nether nr. Barnsley, England

Filed Feb. 1, 1980, Ser. No. 117,517
Int. Cl.³ B65G *19/04;* **E21C** *35/20*
U.S. Cl. 198—725 **13 Claims**



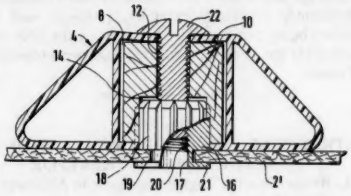
1. A scraper chain conveyor comprising conveyor pans defining a bend round which flight bars attached to at least one chain of said conveyor are guided in the general plane of said conveyor, an auxiliary conveying unit provided at the outside of said bend, said auxiliary conveying unit comprising two spaced apart sprockets rotatable about upstanding axes, a line joining said axes being parallel to a tangent to said bend at least when said auxiliary conveying unit is in use, at least one endless auxiliary chain trained round said sprockets, and means for driving said auxiliary chain in a direction such that its chain run adjacent said scraper chain conveyor moves in the direction of feed of said scraper chain conveyor.

4,281,760

SLAT CONVEYOR BELT FOR SLAT CONVEYORS

Hugo S. Müller, Oettinger Str. 9, 8860 Nördlingen, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,735
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742428
Int. Cl.³ B65G *15/30*
U.S. Cl. 198—846 **1 Claim**



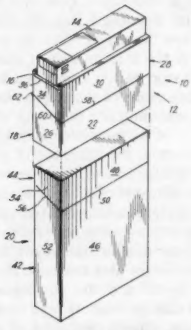
1. A slat conveyor belt for slat conveyors, comprising a plurality of carrying straps arranged to circulate in the conveying direction and slats extending transversely across the conveying direction and resting upon one surface of the carrying straps, said slats having bores therethrough and said bores having widened-out portions and said slats being fixed to the carrying straps by means of a plurality of screw connections passing through the bores in the slats, wherein a nut for each screw connection is formed as a threaded nipple having an expanded portion engaging the other surface of the corresponding carrying strap, said nipple having a substantially cylindrical outer surface formed by an envelope of longitudinal and radially outwardly directed ribs seated upon the nipple, said nipple outer surface having a diameter slightly larger than that of the widened-out bore portion in the slat, said slat positioned with said widened-out bore portion engaging said nipple outer surface to fix said nipple within said slat and prevent rotation when a fixing screw is inserted into the threaded nipple from above through the bore in the slat.

4,281,761

LIGHTER APPARATUS FOR USE WITH CIGARETTE PACKAGES OR CASES THEREFOR

Romualdo Olazabal, Box 2926, Bayamon, P.R. 00619

Filed Jan. 11, 1979, Ser. No. 2,810
Int. Cl.³ A24F *15/10;* **B65D** *85/10*
U.S. Cl. 206—87 **4 Claims**



1. New and improved cigarette lighter apparatus adapted for removable affixation to conventional cigarette packages of the "flip-top" type, said cigarette package having a lower package portion and an upper cover portion hinged thereto by means of

a hinge portion extending transversely across one side wall of the package, comprising:

means for supporting a lighter device adapted to be removably affixed to the exterior of said cigarette package in a manner such that no modification of the package or the contents is required and such that the cover portion of said cigarette package may be opened and closed in a conventional manner as desired, said supporting means including a sleeve portion adapted to fit over and snugly receive a portion of the conventional "flip-top" cigarette package, a lighter device supporting cover portion, and hinge means for pivotally connecting said lighter device supporting cover portion to said sleeve portion, wherein said hinge means pivotally connecting said lighter device supporting cover portion to said sleeve portion comprises a hinge portion extending transversely and rectilinearly along said sleeve and supporting portions, said lighter device supporting cover portion being formed to receive said upper cover portion of said cigarette package in a manner such that said rectilinearly extending hinge portion is substantially aligned with and overlies said rectilinearly extending hinge portion of said cigarette package; and

a lighter device mounted on said supporting means.

4,281,762

IN-STORE COUPON AND METHODS

James C. Hattemer, Cincinnati, Ohio, assignor to Graphic Resources, Incorporated, Cincinnati, Ohio

Filed Mar. 17, 1980, Ser. No. 130,629

Int. Cl.³ B65D *85/48*

U.S. Cl. 206—390 **10 Claims**

1. A coupon supply in elongated form comprising:

a carrier web of predetermined width and indeterminate length;

a plurality of separate base sheets on said web, and adhesive means on said base sheets for releasably holding said sheets on said web and for attaching said sheets to articles;

a plurality of separate top sheets, one top sheet disposed on each of said base sheets and said top sheets and said respective base sheets thereunder being co-extensive with each other, each top sheet having side portions adhered to respective side portions of the respective base sheets, and each top sheet further including a central coupon portion between said side portions free of adherence to its respective base sheet and removably attached to said side portions.

4,281,763

TWO-PIECE HARDSHELL, SOLUBLE AND DIGESTIBLE LIQUID CONTAINING GELATIN CAPSULE

Joseph A. Pace, 3645 Villanova Ct., Bethlehem, Pa. 18017

Filed Oct. 31, 1979, Ser. No. 89,772

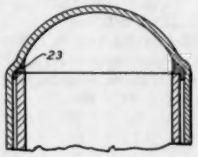
Int. Cl.³ B65D *83/04*

U.S. Cl. 206—530 **2 Claims**

1. A two-piece hardshell, soluble and digestible liquid containing gelatine capsule comprising:

a U-shaped body member having a closed lower end and an open free end terminating in an upper edge;

a cap member for receiving the upper end of said U-shaped body member, said cap member including a continuous interior rim formed in said cap member for abuttingly engaging said upper edge of said U-shaped body member when said capsule is in the assembled state, said cap member further including an apron portion depending from said interior rim; and,



a substantially continuous and substantially liquid impervious interior ultrasonic weld means for attaching said upper edge of said U-shaped body member to said interior rim thereby forming an interior ultrasonic weld which extends continuously 360° around said upper edge of said U-shaped body member.

4,281,764

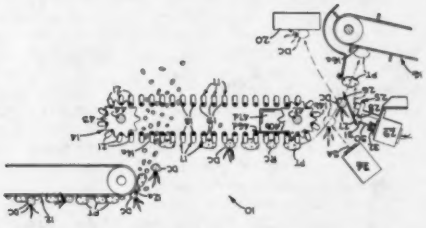
SORTING APPARATUS FOR POTATOES AND THE LIKE

William E. Fowler, Jr., Albany, Ga., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 1, 1980, Ser. No. 117,429

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—557 **4 Claims**



1. An improved sorting apparatus for separating matter such as rocks, dirt clods and small debris from root crops including a supply conveyor, a channelizing conveyor having an upper reach positioned to receive crops, rocks, dirt clods and small debris from the supply conveyor and having a discharge end whereat the crops, rocks and clods are ejected through transversely spaced trajectories toward a receiving area, and a plurality of means mounted in transversely spaced relationships between the discharge end of the channelizing conveyor and the receiving area for selectively extending into said trajectories to deflect rocks and clods from falling toward said receiving area to thereby separate the same from the root crops, the improvement comprising: said channelizing conveyor including an endless series of interconnected bars, each of said bars including a generally straight portion that extends transversely of its path of travel and hook portions formed at the ends thereof which extend generally parallel to its path of travel, each of said bars having a molding formed thereon, each molding having uniformly spaced projections that extend uprightly at a selected orientation in the upper reach of said channelizing conveyor with the molding projections of adjacent bars being aligned in the direction of travel to thereby form means for channelizing the rocks, dirt clods and crops, said bars being interconnected such that the hook portions of each bar engage the transversely extending straight portion of the adjacent trailing bar, said channelizing conveyor further

including sprockets at said discharge end upon which said bars are engaged, said interconnection of said bars causing the molding projections of each bar to remain in said upright orientations until they traverse past the top-dead-center position of said sprockets.

4,281,765

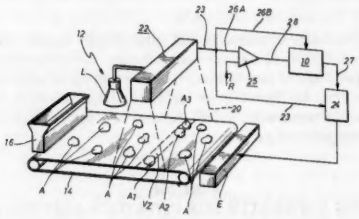
ARTICLE-DETECT SIGNAL SEPARATING NETWORK

Charles R. Brazell, and Joseph A. Villanueva, both of Houston, Tex., assignors to Geosource Inc., Houston, Tex.

Division of Ser. No. 43,694, May 30, 1979. This application Aug. 9, 1979, Ser. No. 65,371

Int. Cl.³ B07C *5/342*

U.S. Cl. 209—576 **15 Claims**



1. In a sorting apparatus having:

(a) means for generating an electrical characteristic signal representative of light reflected from articles randomly disposed across a viewing zone; and

(b) a comparator for comparing the characteristic signal with a predetermined reference level and for generating an article-detect signal representative of the presence of an article within the viewing zone so long as the magnitude of the characteristic signal exceeds the magnitude of the reference level;

the improvement comprising:

means for separating article-detect signals when two articles are next-abutting one with the other such that a comparison of the magnitude of each characteristic signal of each article exceeds the magnitude of the reference level, said separating means comprising:

a network for sampling and holding a predetermined percentage of the peak magnitude of the characteristic signal for each of the abutting articles;

a comparator for comparing the magnitude of the instantaneous characteristic signal for each article with the predetermined percentage of the peak magnitude thereof and for generating an enabling signal when the magnitude of the instantaneous signal falls below the predetermined percentage of the peak magnitude; and,

a timing arrangement responsive to the enabling signal for interrupting the article-detect signal for a predetermined time interval after a predetermined time delay.

4,281,766

METHOD AND APPARATUS FOR SORTING BODIES OF DIFFERENT DENSITIES

Alan Constantine, 573 Bolton Rd., Bury, Greater Manchester, England

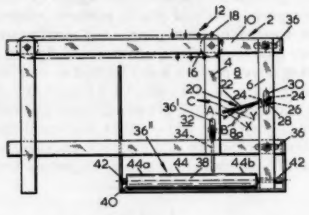
Filed Dec. 3, 1979, Ser. No. 99,816

Claims priority, application United Kingdom, Dec. 6, 1978, 47380/78

Int. Cl.³ B07C *5/00*

U.S. Cl. 209—637 **10 Claims**

1. A method of sorting first bodies from second bodies in a mixture comprising both in which all the first bodies have substantially the same density which is lower than the density of each of the second bodies, said method comprising: delivering first and second bodies in said mixture substantially horizontally at substantially the same velocity to a dropping point at which the continuously moving bodies then fall freely under gravity down a vertical pathway obstructed a distance below the dropping point by an energy absorber comprising a plurality of elongate resilient elements extending side by side, each said element being held at a position along its length substantially stationary relative to the bodies traveling the pathway, and each said element extending in a downwardly inclined attitude from said position to a free end of the element, and when considering a geometric projection of each said element on an imaginary substantially horizontal plane in which said mixture is delivered to said dropping point, the geometric



projection of said position on said plane being further along the substantially horizontal direction in which said mixture is delivered to the dropping point than the geometric projection of said free end on said plane, said freely falling bodies making impact on the elements intermediate the free end of an impacted said element and said position so that the energy absorber is deformed by second bodies to an extent permitting them to pass the energy absorber and continue along the pathway but said energy absorber stopping travel of first bodies along the pathway past the energy absorber, and propelling such stopped first bodies from the pathway under the effect of resilient action.

4,281,767

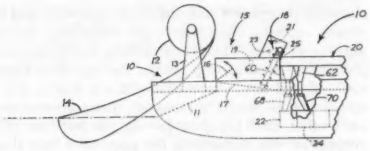
TRAWLER FISH-SORTING SYSTEM

Robert C. Carpenter, 628 SE. 3rd St., Newport, Oreg. 97365

Filed Aug. 27, 1979, Ser. No. 70,153

Int. Cl.³ B07C *7/04*

U.S. Cl. 209—703 **4 Claims**



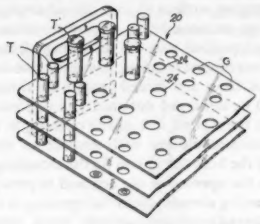
1. Fish-sorting apparatus for use on board a fishing vessel of the type including a plurality of fish-sorting bins, said apparatus in operative condition comprising

fish-receiving deck means disposed above said bins including a pair of side-by-side adjacent deck portions which are hinged together along their adjacent sides for adjustment to different angular orientations, and

passage means including, for each deck portion, at least a pair of passage sections, with one operatively communicating between said portion and at least one of said bins, and the other operatively communicating between said portion and a region outboard of the vessel,

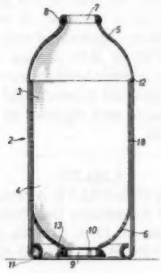
said deck portions, in one set of relative angular orientations, sloping downwardly away from the hinged connection therebetween toward said passage means, and in another angular orientation occupying a substantially common inclined plane.

4,281,768
ASSAY TUBE RACK
Philip B. Sommers, 923 Garden Rd., Orange, Conn. 06477
Filed Aug. 10, 1979, Ser. No. 65,465
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—74 **2 Claims**



1. In an assay tube rack of the type having supporting means for holding a plurality of assay tubes and having opposed open sides, the improvement comprising: means forming associations of holes in said rack, there being one association of said holes traversing each of said opposed open sides of said rack; each of said associations of holes comprising distinctly separated groups of holes consisting of three holes in each group, wherein a first hole in each group is disposed closely adjacent to a respective side of said rack, a second hole in each group is disposed more remote from said respective side of said rack than said first hole with the axis of said second hole being laterally offset from the axis of said first hole, and a third hole in said group is disposed more remote from said respective side wall than said second hole with the axis of said third hole being disposed between parallel line projections of the axes of said first and second holes, and wherein a side of said first hole in one group is laterally offset from an adjacent side of said second hole in an adjacent group thereby providing a distinct grouping of assay tubes when the groups of holes in said rack are filled with assay tubes.

4,281,769
PACKING CONTAINER
Rolf L. Ignell, Grilly, France, assignor to Tetra Pak Developpement SA, Pully-Lausanne, Switzerland
Filed Aug. 8, 1979, Ser. No. 64,920
Claims priority, application Sweden, Aug. 11, 1978, 7808571
Int. Cl.³ B65D *6/30*
U.S. Cl. 215—12 R **10 Claims**

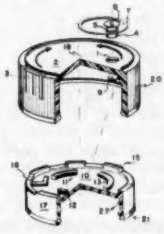


1. A packing container comprising:
an expanded tubular member having a central cylindrical portion and dished first and second end portions on respective ends of said cylindrical portion, wherein said tubular member is comprised of a laminate which includes a gas barrier layer and at least one additional layer;
an end plate, said end plate having an edge groove, which edge groove receives said first end portion of said tubular member such that said end plate closes said tubular member at said first end thereof; and
an edge ferrule which receives said second end portion of said tubular member.

4,281,770
BLOW MOLDED CONTAINER WITH SEPARATE HANDLE
Dewey Rainville, Westfield, N.J., assignor to Rainville Company Inc., Middlesex, N.J.
Filed Sep. 10, 1979, Ser. No. 74,137
Int. Cl.³ B65D *25/28*
U.S. Cl. 215—100 A **7 Claims**

1. A plastic blow molded container made of stretchable material having side walls bottom, and an opening through which the contents of the container can be removed therefrom, a boss comprising an integral construction with the side walls of the blow molded container, a hollow chamber within the boss and with an entrance passage into the hollow chamber at the end of the hollow chamber which is remote from an outside surface of the container, the entrance passage being of less transverse cross section than the interior of the chamber normal to the longitudinal axis of said entrance passage, a handle that is a different piece from the container, a projection on the handle for insertion into the hollow chamber in the boss, the portion of the projection that first enters the hollow chamber being larger than the cross section of said entrance passage, and the walls of the chamber that terminate at the sides of said entrance passage being flexible and elastic enough to yield and stretch to pass the end of the projection into a portion of the chamber that is larger than the cross section of the passage.

4,281,771
CHILD-RESISTANT/NON-CHILD-RESISTANT CLOSURE
Craig S. Siegel, 88 Bear Mountain Rd., Ringwood, N.J. 07456
Filed Jun. 9, 1980, Ser. No. 157,534
Int. Cl.³ B65D *55/02, 85/56;* **A61J** *1/00*
U.S. Cl. 215—220 **8 Claims**



1. A child-resistant/non-child-resistant closure for containers having an exterior male threaded portion comprising, in combination: An inner cap member having the interior of its depending sidewalls formed with female threads adapted to be

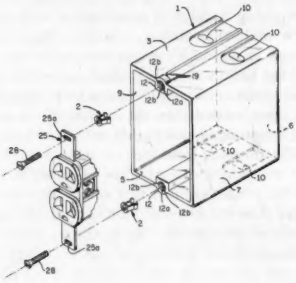
threaded onto said container portion, with an integrally formed circular top panel having a plurality of spaced-apart stop lugs projecting vertically upward; an outer cap member with depending sidewalls and an integrally formed top panel embodying a formed hole superimposed in the same radial arc as said plurality of spaced-apart stop lugs, said outer cap loosely encompassing said inner cap; an integrally formed plug for insertion into said hole of the outer cap member to place the base of said plug in space between said stop lugs of the inner cap member, to engage said stop lugs to drive said inner and outer cap members as a unit when torque is applied in either direction of rotation to the other cap member rendering the closure non-child-resistant; said plug for removal from said hole in the outer cap member disengaging the inner and outer cap members to allow the outer cap member free and separate rotation rendering the closure child-resistant.

4,281,772
Patent Not Issued For This Number

4,281,773
ELECTRICAL WIRING BOX

Gary L. Mengeu, Parkersburg, W. Va., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 25, 1977, Ser. No. 818,308
Int. Cl.[3] H02G *3/08*
U.S. Cl. 220—3.2 **9 Claims**



1. A box arrangement comprising

a box including a plurality of walls arranged to define a space for receiving a device, said box having a longitudinal opening therein in which a mounting element is disposed and further having a pair of abutment portions on opposite sides of the opening;

said mounting element comprising

a central portion adjacent to the front of the opening in the box and having a portion in abutment with a portion of the box adjacent to the opening, said central portion having an opening therethrough by which a threaded screw may be inserted and pushed longitudinally into the mounting element, said opening being of a size to permit the threaded portion of a screw to be freely and readily inserted into the mounting element without the central portion interfering with the forward movement of the screw or gripping onto the threaded portion of the screw;

first and second spaced-apart side portions connected with the central portion on opposite sides of the opening in the central portion and extending along the opening in the box; and

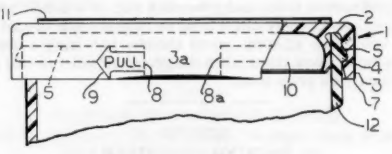
first and second deflective sections connected with the first and second side portions, respectively, and adjacent to the abutment portions of the box, each deflective section including a thread-engaging portion extending in a direction toward the other thread-engaging portion, each of said thread-engaging portions having a single thread-engaging surface, the two thread-engaging surfaces being spaced apart and defining a screw receiving region therebetween, said two thread-engaging surfaces being substantially parallel and each being at an angle with respect to a reference line lying perpendicular to the directions the thread-engaging portions extend, said thread-engaging portions being in the path of a screw pushed into the mounting element whereby the screw contacts the single thread-engaging surface of each thread-engaging portion;

said deflective sections being operative when a screw is inserted and pushed into the mounting element and into the screw-receiving region between the two thread-engaging surfaces and forced against the thread-engaging surfaces to be deflected outwardly in opposite directions away from the central axis of the opening in the box and to be positioned closely with respect to the abutment portions of the box, thereby to fix the mounting element in position in the opening in the box and to prevent removal of the mounting element from the opening in the box, and the two thread-engaging surfaces being operative as a screw is pushed into the screw-receiving region to ride along the threads of the screw without impeding the forward movement of the screw, and to engage the threads of the screw so as to prevent withdrawal of the screw from the mounting element except by unthreading the screw from engagement with the thread-engaging surfaces.

4,281,774
TAMPER PROOF SNAP CAP

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 17, 1980, Ser. No. 130,925
Int. Cl.[3] B65D *41/16, 41/18*
U.S. Cl. 220—306 **5 Claims**



1. A cap for sealing a container having a circumferential outwardly projecting bead formed on its outside surface, near the container rim, said cap comprising a top panel section, a skirt section depending from the periphery of said panel, a discontinuous circumferential groove formed on the inside surface of said skirt and constructed and arranged to cooperate with said container bead, the ends of said groove being a short distance apart, whereby a segment of said skirt is bulged slightly outward by the engagement of said container bead and said skirt segment, a lower skirt section below said groove extending under said container bead to prevent removal of said cap, means for forming a seal between said cap and container, and score means adjacent said segment to permit removal of said lower skirt section.

4,281,775
CAN TAPPING VALVE APPARATUS

Frank J. Turner, 1539 Roundtable Dr., Dallas, Tex. 75247

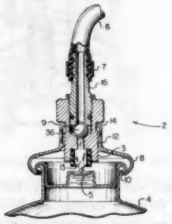
Filed Jan. 15, 1979, Ser. No. 3,309
Int. Cl.[3] B67B *7/24;* B65D *83/14*
U.S. Cl. 222—82 **2 Claims**

1. Can tapping valve apparatus for transferring pressurized fluid from a container to an outlet comprising:

a generally cylindrical body member having at least a portion of its outer surface threaded for engagement with said container, a fluid flow passageway extending longitudinally along its axis, a valve seat disposed in said flow passageway and a threaded inner surface at a first end of said body member;

means connected to said body member for piercing said container, including fluid sealing means carried within a second end of said body member for forming a seal between said second end and the container;

a generally cylindrical stem member attached to said first end of said body member having a fluid flow passageway extending along its axis, means on a first end of said stem member for coupling to said outlet, a threaded portion on a second end of said stem member engaged with the threaded inner surface of said body member whereby spacing between the second end of said stem member and



the valve seat in said body member is adjustable by rotation of said stem member relative to said body member;

an elastomeric ball disposed between said valve seat in said body member and the second end of said stem member; and

sealing means carried on the second end of said stem member for providing a fluid tight seal at a predetermined pressure level between said stem and body members, whereby excessive pressure levels are indicated by fluid leakage.

4,281,776

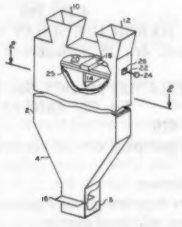
PROPORTIONAL FEEDER FOR PARTICULATE SOLIDS

Robert R. Goins, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Continuation of Ser. No. 811,358, Jun. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 658,569, Feb. 17, 1976, abandoned, which is a continuation of Ser. No. 525,862, Nov. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 452,922, Mar. 20, 1974, abandoned. This application May 15, 1979, Ser. No. 39,404

Int. Cl.[3] B67D *5/60*

U.S. Cl. 222—132 **18 Claims**



1. A proportional feeder for particulate solids comprising in combination:

a housing having a vertically disposed upper portion and an inwardly converging lower portion with an unobstructed chamber extending therethrough;

at least two inlet means vertically disposed in said vertically disposed upper portion, each inlet means having a first end and a second end with each of said second ends being in communication with the upper end of said unobstructed chamber;

at least one separating means vertically disposed in the upper end of said unobstructed chamber and so positioned as to divide the cross-sectional area of said upper portion of said unobstructed chamber adjacent the second ends of said inlet means into at least two zones, at least one of said vertical means being laterally adjustable between said inlet means, thereby varying the relative areas of said zones as measured at the lower end of said separating means;

an outlet means disposed in the lower portion of said inwardly converging portion of said housing and in communication with said unobstructed chamber and so adapted as to provide a flow of particulate solids therethrough at a rate not greater than the combined rates of flow through said inlet means;

wherein said separating means is of such a vertical length that it extends at least a minimum distance below the valley which would otherwise be created in the absence of said separating means by the intersection of the upper solids surface of adjacent particulate solids introduced through said inlet means when said feeder is filled with particulate solids such that the solids avoid turbulence at the trailing edge of said separating means as the solids progress downwardly through the remaining section of said upper portion of said vertically disposed housing extending below said separating means; and

wherein the section of said upper vertically disposed portion of said housing which extends downwardly below the point of termination of said separating means is of a length which is sufficient to establish flow uniformly downward of solids from each of said zones in the upper section of said unobstructed chamber as defined by said separating means.

4,281,777

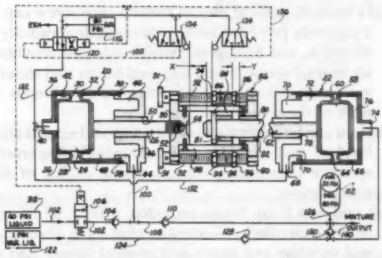
DUAL LIQUID PROPORTIONING APPARATUS

Robert L. Akens, 3201 Boggs Rd., Zanesville, Ohio 43701

Filed Apr. 6, 1978, Ser. No. 894,039

Int. Cl.[3] B67D *5/60*

U.S. Cl. 222—134 **6 Claims**



1. In a dual liquid proportioning and dispensing apparatus the combination of a first liquid source communicated to a first variable volume chamber means provided with flexible walls and port means; a second liquid source communicated to a second variable volume chamber means provided with flexible walls and port means; a piston and cylinder means operatively connected to each of said chamber means to collapse a respective one of said chamber means upon a respective power stroke to deliver liquid from a respective one of said chamber port means; a source of driving pressure operatively connected to each one of said piston and cylinder means to drive said pistons; piston stroke adjustment means mounted on at least one of said piston and cylinder means and operative to vary the effective stroke of said piston relative to the force applied to the associated variable volume chamber means and the volume of liquid dispensed therefrom upon a power stroke, said piston stroke adjustment means includes a frame means mounted in sliding relationship with the piston rod of said piston and cylinder means and including sleeve means slidably mounted in releasably locked relationship along a given length of said

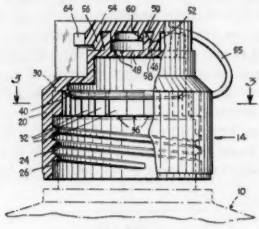
frame for contact with said piston rod to vary the effective stroke length of said rod relative to the fixed position of said sleeve means on said frame; a common liquid collecting tank communicated to the output liquid delivered from each of said chambers; and fluid control means operatively communicating with each of said piston and cylinder means, to each of said variable volume chambers and to said collecting tank to provide automatic operation of said apparatus for actuating said piston and cylinders to charge said collecting tank upon predetermined pressure signals.

4,281,778

LOCKING CLOSURE CAP

Morton Stull, Split Rock Rd., Boonton Township, Morris County, N.J. 07005

Filed Jan. 18, 1980, Ser. No. 113,433
Int. Cl.[3] B65D *25/42, 55/02*
U.S. Cl. 222—153 **18 Claims**



1. A closure cap construction for a dispensing container, said construction being of the type adapted to be held permanently captive on the container and having a closeable dispensing orifice for enabling discharge of liquid from the container when desired, comprising in combination:

(a) a molded, resilient plastic, locking-type screw cap having a cap body provided with an internal, downwardly facing shoulder, and having an annular sidewall provided with an internal screw thread disposed below said shoulder for engagement with corresponding screw threads on the neck of the container,

(b) said cap body further having a top wall spaced above the level of said shoulder and containing an aperture, said aperture constituting the dispensing orifice of the said construction,

(c) said cap body being provided with a set of multiple internal, circularly disposed ratchet teeth disposed below said shoulder and above said internal thread, said ratchet teeth being joined to said annular sidewall and extending radially inward therefrom for engagement with cooperable outwardly facing ratchet teeth on said container neck, so as to positively prevent unscrewing movement of the cap body with respect to the container,

(d) the upper ends of said ratchet teeth of the cap body being joined to said internal shoulder and being integral therewith, said shoulder thereby effecting a stiffening of said teeth and minimizing the tendency for excessive deformation thereof,

(e) the lower ends of said teeth being exposed and unconnected, to enable them to readily engage the container neck teeth as the cap construction is screwed onto the neck,

(f) said cap body further including a yieldable annular seal disposed radially inward of the set of ratchet teeth,

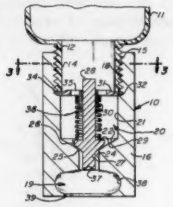
(g) the root diameter of the set of ratchet teeth being substantially the same as the root diameter of the internal thread of the cap body.

4,281,779

DISPENSING VALVE

John S. Shepard, 1304 S. Shields St., Ft. Collins, Colo. 80521

Continuation-in-part of Ser. No. 939,126, Sep. 5, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 4,359
Int. Cl.[3] B65D *25/38*
U.S. Cl. 222—501 **5 Claims**



1. A dispenser valve assembly for dispensing a viscous, sticky material from a container having a neck defining a discharge opening, said assembly comprising:

a dispenser valve body;

means on said body for engaging said neck;

normally closed valve means disposed within said body and exclusive of said container for preventing discharge of said material from said container;

a dispensing cavity located rigidly in said body, having an access opening through one end thereof to the exterior of said valve body and remote from said engaging means, for accessibly retaining for subsequent use an increment of material discharged from said container through said valve means;

means in said body defining an elongated passage for said material and coupled at one end to said valve means and opening at its other end into said cavity;

said access opening facing outwardly away from said one end of said passage means and said cavity being generally spheroidal in shape with a generally annular concave interior wall extending outwardly from said other end of said passage to said access opening;

and said valve means including a stem portion, disposed in said passage and exposed from within said cavity, for enabling valve opening by manipulation of a tool inserted through said access opening into engagement with a facing end of said stem portion.

4,281,780

HERBICIDE SPRAY SYSTEM

Anthony Lagani, Jr., 78 Springbrook Rd., Morristown, N.J. 07960

Filed May 21, 1979, Ser. No. 40,751
Int. Cl.[3] A01C *15/04*
U.S. Cl. 222—610 **5 Claims**

1. A liquid pumping device comprising a rotary spreader including

(a) a load carrier;

(b) means for supporting said load carrier on rotatable means for moving said load carrier;

(c) a drive shaft terminating in a stirrer bar being located within said load carrier; and

(d) means cooperable with said rotatable means for rotating said drive shaft and stirrer bar;

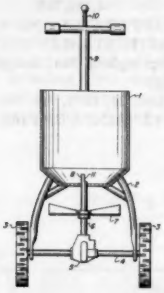
in combination with a pumping system comprising

(e) a liquid reservoir cannister removably deposited into said load carrier;

(f) a spray nozzle assembly comprising at least one outlet nozzle and a fluid delivery tube extending into said cannister;

(g) pumping means on said cannister for pumping the liquid in said cannister into said delivery tube;

(h) means for engaging the stirrer bar of said spreader with the pumping means when the cannister is deposited in the load carrier whereby movement of said rotatable means



causes rotation of said drive shaft and stirrer bar thereby driving the pumping means and enabling the liquid contained in the cannister to move through the delivery tube for dispensation from the outlet nozzle.

4,281,781

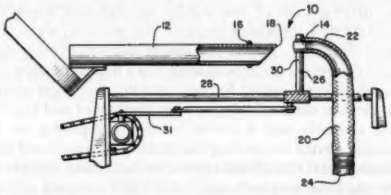
HOSE EVERTING METHOD AND APPARATUS THEREFOR

William H. Pope, 146 Chestnut, Winnetka, Ill. 60093

Filed Jan. 15, 1979, Ser. No. 3,220

Int. Cl.[3] **A41H** *43/02;* **A41B** *11/00*

U.S. Cl. 223—39 **10 Claims**



1. An improved method of processing a knitted sleeve-like item formed as an elongated sleeve with open longitudinal extremities, which comprises:

first drawing an elongated sleeve over a cylindrical mounting tube having a free end whereby the leading end of said sleeve receives said free end;

then continuing drawing said sleeve until the following end of said sleeve passes a means for resisting sliding on said mounting member;

then drawing said sleeve from said leading end in the reverse direction so that said sleeve is drawn back over itself, whereby movement of said sleeve about its following end towards said free end of said mounting member is retarded by said sliding resisting means, until said leading end is drawn beyond said free end of said mounting tube;

then stitching said leading end closed; and

then providing a suction through said mounting tube and allowing said sleeve to be drawn into said mounting tube, closed leading end first.

4,281,782

BUTTON SEWING DEVICE

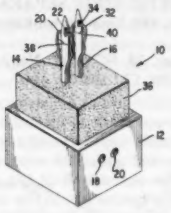
Walter H. W. Marsh, Scotch Plains, and Michael J. Brienza, Ridgewood, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,962

Int. Cl.[3] **D05B** *85/00, 3/14*

U.S. Cl. 223—102 **11 Claims**

1. A button sewing device comprising a base; a pair of needles projecting from the base for use in penetrating a layer of material and extending through the holes of a button to be attached to the material, a loose loop of thread extending through the eye of each needle and having ends fixed with respect to the needle, the thread being movable by the material into positions against the needles to close the loops as the



material is moved down the needles; and elastomeric material over the base and about the needles compressible under the material by pressure applied to the button after it has been moved down the needles, and expandable when the pressure is removed for raising the material and thereby the thread to open the loops above the button for receiving a thread bundle.

4,281,783

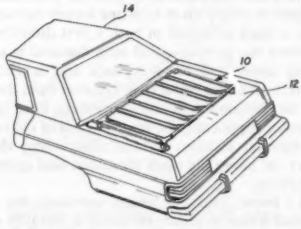
DETACHABLE LUGGAGE CARRIER FOR AUTOMOBILES

Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Oct. 2, 1978, Ser. No. 947,396

Int. Cl.[3] **B60R** *9/04*

U.S. Cl. 224—325 **5 Claims**



1. A luggage carrier for a vehicle, said luggage carrier being the type adapted to be mounted to the trunk lid of said vehicle, said luggage carrier comprising:

a frame section carried on the outside surface of said trunk lid, said frame section having a plurality of upstanding legs adapted to extend through apertures in said truck lid; and

a plurality of fastening means carried on the inside surface of said trunk lid and each of said plurality of fastening means aligned with a respective one of the apertures, said fastening means releasably engaging said frame legs to releasably secure said frame to the outside surface of said trunk lid,

wherein one of said fastening means comprises a housing having a bore, said housing being carried by said trunk lid such that said bore is longitudinally aligned with one of said trunk apertures, the frame leg received by said housing having a detent slot, said fastening means housing having a manually operable detent mechanism engagable with said detent slot to secure said leg within said housing, said detent mechanism being biased toward said bore to automatically engage said detent slot upon the insertion of said leg within said aperture into said bore, wherein another of the frame legs has a detent slot and another of said plurality of said fastening means has a flange element

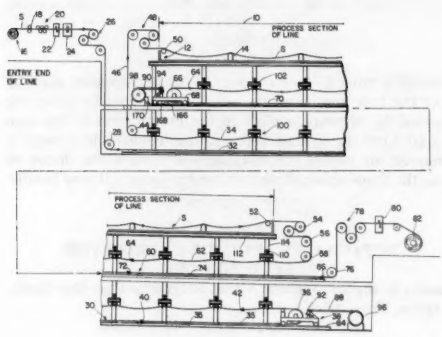
pivotally receiving said detent slot of the said another of said frame legs to permit said legs and, thus, said frame to pivot around the flange element of said another fastening means, whereby the fastening means cooperate to attach the carrier to the vehicle.

4,281,784

MAGNETIC STRIP SEPARATOR

James W. McMullen, 696 Youngstown-Kingsville Rd., Vienna, Ohio 44473

Filed Apr. 24, 1979, Ser. No. 32,936
Int. Cl.³ B65H *17/42*
U.S. Cl. 226—118 **12 Claims**



1. In a moving metal strip material processing line including a looper section with at least one looper car mounted for travel along a track structure in both a first direction to accumulate and store the moving metal strip material in a horizontal loop having upper and lower strands and a second direction to refeed the moving metal strip material from the horizontal loop into the remainder of the processing line, an upper support means for supporting the upper strand of the horizontal loop in a horizontal fashion without obstructing the travel of the looper car along the track structure, said upper support means comprising:

(a) a frame structure which surrounds the horizontal loop, said frame structure including a plurality of vertical frame members positioned at predetermined distances from the track structure such that said vertical frame members do not contact the looper car as the looper car travels along the track structure; and

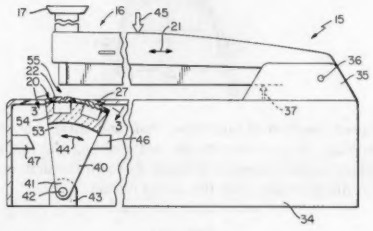
(b) a plurality of magnetic strip support and separator units respectively secured to said plurality of vertical frame members and positioned at a predetermined height above the track structure such that none of said plurality of magnetic strip support and separator units contacts the looper car as the looper car travels along the track structure, each of said plurality of magnetic strip support and separator units including a plurality of elongated, non-magnetic rollers mounted thereon in transverse relationship relative to the upper strand of the horizontal loop, each of said plurality of magnetic strip support and separator units also including magnetic means mounted thereon for lifting the upper strand into contact with said plurality of elongated, non-magnetic rollers and for supporting the upper strand in essentially horizontal fashion while the looper car travels along the track structure, said magnetic means having at least one elongated magnetic element located between adjacent elongated, non-magnetic rollers and positioned in spaced, transverse relationship relative to the upper strand such that an air gap is formed between said elongated magnetic element and the upper strand when said magnetic means lifts the upper strand into contact with said plurality of elongated, non-magnetic rollers.

4,281,785

STAPLING APPARATUS AND METHOD AND THERMOPLASTIC STABLES USED THEREWITH

Alden W. Brooks, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Dec. 21, 1979, Ser. No. 106,411
Int. Cl.³ B25C *5/02*; F16B *15/00*
U.S. Cl. 227—120 **4 Claims**



1. In a stapling apparatus for stapling an assembly of components, said apparatus having a stapling head for carrying and serially dispensing a plurality of staples made entirely of thermoplastic material, each of said staples comprising a bight and a pair of legs extending in substantially parallel relation from opposite ends of said bight, staple driving means in said head for driving each of said staples through said assembly once each staple is dispensed into a driving position, and a clinching anvil for clinching outer portions of said legs of each staple, the improvement wherein said anvil has a heated portion comprising an integral heater for heat shaping said outer portions of said legs in clinched relation after disposal of said legs through said assembly and a cooled portion comprising an integral cooling device for cooling said outer portions of said legs after shaping thereof, and said apparatus comprising a single support for said anvil and its heated and cooled portions, said support being mounted for pivoting movements about a single pivot to enable movement of said heated portion into position to provide said heat shaping of said outer portions and then movement of said cooled portion into position to provide said cooling of said outer portions.

4,281,786

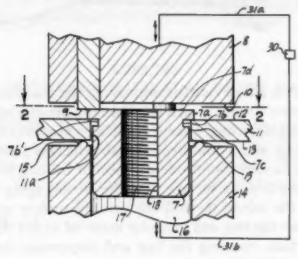
METHOD OF PRESSURE FUSING A NUT TO A SUPPORT SHEET AND PRODUCT THEREOF, AND MACHINERY FOR PRACTICING THE METHOD

Guenther Krueger, 16 Bristol Ct., Berkeley Heights, N.J. 07922

Filed Aug. 25, 1980, Ser. No. 180,666
Int. Cl.³ B23K *20/02*; B23P *11/00*
U.S. Cl. 228—116 **8 Claims**

1. A method of securing a nut to a support plate comprising in combination: (1) inserting a cylindrically-shaped nut into through-space of an aperture of a sheet of malleable material, said sheet having opposite first and second surfaces and said aperture including said through-space extending through said sheet and said first and second surfaces, said aperture being substantially circular, and said nut being undercut, the nut having top and bottom ends with a circumscribing outer-wall surface extending between said top and bottom ends, said aperture having a first predetermined diameter at said first surface, and said nut having a second predetermined maximum diameter at a point in juxtaposition to said top end and the nut having a female-threaded channel extending between said top and bottom ends, said second predetermined maximum diameter being of a greater dimension than said first predetermined

diameter of said aperture, and said nut at the undercut thereof having a third predetermined diameter of said circumscribing outer-wall surface at a smaller diameter than each of said first and second diameters, (2) substantially aligning first and second press-surfaces at each of opposite ends of said aperture, at least one of said first and second press-surfaces being movable toward the other of the first and second press-surfaces sufficiently to compact said top end and said sheet therebetween, the first press-surface including a first raised portion positioned above and to concurrently press upon each of (a) a portion of said first surface in juxtaposition to said aperture and (b) an



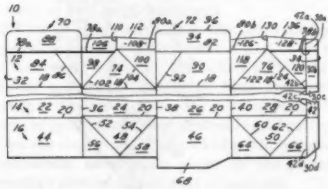
edge-portion of said top end of the nut, said edge-portion overhanging said first surface when the nut is in the inserted state, the second press-surface mounting a second raised portion positioned to come into contact with and become pressed into a portion of said second surface at a location spaced-away from and in juxtaposition to said aperture, and (3) pressing at least one of said first and second press-surface toward the other one thereof a distance sufficiently to compact said edge-portion into said first surface and sufficiently to compact said sheet adjacent said second surface against said circumscribing outer-wall with sufficient force to weld the sheet to the circumscribing wall of the nut.

4,281,787

CONTAINER AND BLANK FOR CONSTRUCTING SAME

Warren R. Hensey, Highland, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 17, 1979, Ser. No. 86,120
Int. Cl.³ B65D 5/74
U.S. Cl. 229—17 G **3 Claims**



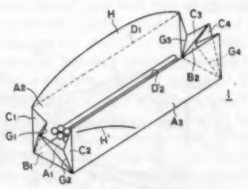
1. In a thermoplastic coated paperboard container adaptable to being folded into leakproof "slant top" or "flat top" container from a gable top configuration, and including a tubular body formed from a blank having four side panels and a side seam panel formed on one end thereof intermediate first and second vertical cut edges, and having a bottom closure thereon, a pair of opposed roof panels overlying said body, a pair of opposed triangular end panels in-folded between said roof panels from the opposite ends thereof, two pairs of triangular fold-back panels, each pair of which is integral with a respective one of said infolded triangular end panels along fold lines which underlie said roof panels, said fold-back panels being folded adjacent the undersides of said roof panels, an upper closure panel surmounting each of said roof panels, two pairs of infold lips joined by fold lines and surmounting respective pairs of triangular fold-back panels and adjoining triangular end panels, an extensible pouring spout housed in collapsed condition within said container and defined in part by one of said triangular end panels and an adjacent pair of said fold-back panels, said spout also being defined by adjacent portions of said roof panels and upper closure panels, said side seam panel being secured along the edge portion of the side panel and roof panel and upper closure panel located at the opposite end of said blank, the improvement characterized by having a first wide score line portion formed between said one roof panel and the adjacent upper closure panel and extending laterally from said first vertical cut edge, a second wide score line portion formed across each of the fold-back panels and adjacent infold lips positioned adjacent opposite ends of said one roof panel and the adjacent upper closure panel, and a third wide score line portion extending laterally from said second vertical cut edge and formed across said side seam panel to communicate with one of said second wide score line portions to enhance the folding of said upper closure panels in the direction of the first, second and third wide score line portions, to thereby place the juncture of the side seam panel and adjacent roof panel and upper closure panel in the vicinity of the adjacent wide score line portions in compression and thus eliminate the possibility of leakage therebetween.

4,281,788

FOLDING PACKAGE

Takako Aeba, No. 401 Shuwa Naito-machi Residence, 1-26, Naito-machi, Shinjuku-ku, Tokyo 160, Japan

Filed Aug. 7, 1980, Ser. No. 176,541
Int. Cl.³ B65D 5/10
U.S. Cl. 229—22 **3 Claims**



1. A folding package comprising a sheet of paper having several sections defined by creases formed thereon, said sections including three rectangular sections arranged side by side, two triangular sections, each of which has a side common to the end line of the central rectangular section, and four web sections, each of which bridges between one of said triangular section and one of said rectangular sections; and holding means for holding an intended shape when folded.

4,281,789

CLIMATE CONTROL FOR AN ANIMAL BARN

Warren Quinlisk, La Crosse, Wis., assignor to L. B. White Company, Inc., Onalaska, Wis.

Filed Aug. 10, 1979, Ser. No. 65,418
Int. Cl.³ F24F 7/00; F24D 11/00
U.S. Cl. 236—44 C **2 Claims**

1. A climate control to regulate the temperature and humidity of the air in a barn comprising:

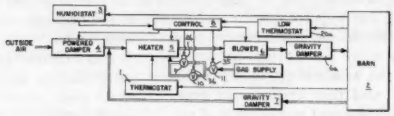
(a) temperature sensing means for detecting the temperature of the air in said barn and for comparing it to a preselected temperature;

(b) relative humidity sensing means connected with said temperature sensing means for detecting the relative humidity of the air in said barn and for comparing it to a preselected relative humidity;

(c) air circulating means operable by at least one of said

temperature sensing means and said relative humidity sensing means for circulating the air in said barn;

(d) heating means operable by at least one of said temperature sensing means and said relative humidity sensing means for heating the air circulated by said circulating means;



(e) ventilating means operable by said relative humidity sensing means and connected to said heating means for introducing outside hot air into said barn;

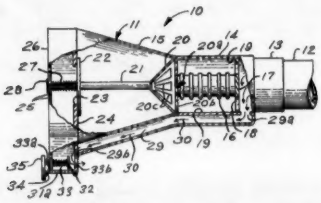
(f) and a minimum temperature sensing means for detecting the entrance of cold air into said barn and for discontinuing the operation of said air circulating means upon detection of said cold air.

4,281,790

SAFETY SHOWER HEAD

Merrill F. McGinnis, 12723 Carmen Dr., Surprise, Ariz. 85345

Filed May 2, 1980, Ser. No. 145,781
Int. Cl.³ G05D *23/12*
U.S. Cl. 236—93 B **2 Claims**



1. A safety shower head, comprising, in combination, a hollow main body, a thermostat secured in said hollow main body, for expanding when the water temperature is too high, to close an orifice in a piston of a shut-off valve, to prevent hot water flow on a bather immediately, and a relief valve secured in an off-set portion of said main body, for releasing the hot water away from the thermostat, after the inlet source of hot water is shut off, so as to enable normal use of said safety shower head again; the outer periphery of an end of said thermostat being fixedly secured to the inner periphery of said hollow main body, and a plurality of radially spaced-apart openings in a skirt of said piston normally receive water when said safety shower head is in use, the water normally passing through a central opening in an inner wall fixedly secured, at its outer periphery, to the inner periphery of said hollow main body, and said skirt of said piston is fixedly secured to a piston rod, and the opposite end of said piston rod threadingly receives an adjustment screw for adjusting the tension of a coil spring received on said piston rod, and one end of said coil spring urges against a disc fixedly secured to said piston rod, and the opposite end of said coil spring urges against the rear of the face of said hollow main body, and said adjustment screw is freely received in an opening in said face of said hollow main body.

4,281,791

TRACTION AID DEVICE

Cecil F. Schaaf, and Craig R. Schaaf, both of 3015 Palmer Rd., Standish, Mich. 48658

Filed Dec. 10, 1979, Ser. No. 101,729
Int. Cl.³ E01B *23/00*
U.S. Cl. 238—14 **7 Claims**

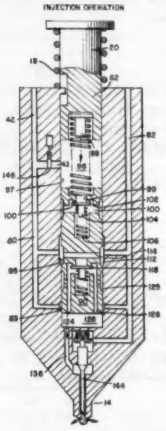
1. A traction aid device for improving the traction of a drive wheel of a motor vehicle on a low traction driving surface such as ice comprising: a bag, coarse granular material only partially filling the bag, and a compressible tab attached along one side of the bag whereby, upon the insertion of the bag between the wheel and the driving surface with the tab engaging the wheel, rotation of the wheel toward the driving surface engages the tab and draws the bag and granular material under the wheel in a rolling action, bursting the bag and dispensing the granular material beneath the wheel.

4,281,792

SINGLE SOLENOID UNIT INJECTOR

Albert E. Sisson, Farmington Hills, and Donald J. Lewis, Troy, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jan. 25, 1979, Ser. No. 6,948
Int. Cl.³ F02M *47/02*
U.S. Cl. 239—5 **40 Claims**



12. A method of electronically operating a fuel injector disposed in operative relationship to a combustion chamber of an internal combustion engine, said injector including a body having an axially extending bore, a primary pumping plunger and a secondary plunger positioned therewithin for axial movement, a nozzle situated at one end of the body remote from the primary pumping plunger, a timing chamber defined in said body between said plungers, a metering chamber defined in said body between said secondary plunger and said nozzle, passages in said body for introducing fuel into said chambers, and electronically operated control valve means situated proximate said passages and said timing chamber, said method comprising the steps of:

introducing fuel at supply pressure into said passages and said chambers;

applying force to the primary pumping plunger to move same axially;

supplying an electrical signal to the control valve means to seal the timing chamber and form a hydraulic link between the primary and secondary plungers and moving said plungers in concert;

discharging the fuel in the metering chamber through the nozzle while maintaining the electrical signal; and

terminating the electrical signal to the control valve means to open the timing chamber and break the hydraulic link between the plungers and moving said primary pumping plunger independently of said second plunger.

4,281,793

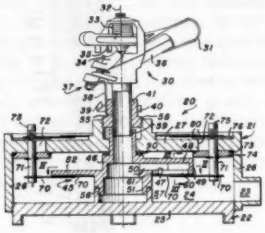
WATER SPRINKLER WITH FLAT PLATE PATTERN CONTROL

Robert E. DeWitt, 49 Sherwick Rd., Oswego, Ill. 60543

Continuation-in-part of Ser. No. 51,861, Jun. 25, 1979, which is a continuation-in-part of Ser. No. 893,268, Apr. 5, 1978, Pat. No. 4,180,210. This application Jan. 25, 1980, Ser. No. 115,263

Int. Cl.³ B05B *3/06*

U.S. Cl. 239—11 **19 Claims**



17. A method of spraying water in a desired pattern of ground coverage using a vertical-axis sprinkler with a rotating spray head, comprising the steps:

aligning, with a radial direction of a spray of water from said spray head to said pattern, a radially-extending sampling aperture formed in a horizontal disk rotating with said spray head, the sampling aperture having a circumferentially enlarged width at radially outward portions;

passing a flow of water through said sampling aperture from a source of water to said spray head; and

blocking said flow of water through a selected, radially outward portion of said aperture in at least a part of an arc of rotation of said spray head, the unblocked portion at each circumferential position of the spray head and sampling aperture being in direct relation to the corresponding radius of the pattern of ground coverage desired in said part of said arc, such that the shape of the unblocked portion is geometrically substantially identical in shape to the pattern of ground coverage desired in said part of said arc.

4,281,794

FOUNTAIN SYSTEM INCLUDING A PLURALITY OF WOODEN BARRELS

William Dimino, 12226 ½ Montana Ave., Los Angeles, Calif. 90049

Filed Sep. 12, 1980, Ser. No. 186,459

Int. Cl.³ B05B *17/08*

U.S. Cl. 239—20 **2 Claims**

1. A fountain system comprising:

a. a first wooden barrel which is disposed at a first level, said first wooden barrel having an outlet for water;

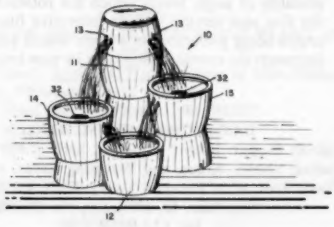
b. one half of a second wooden barrel which is disposed at a second level which is below the first level of said first wooden barrel so that water from said outlet of said first wooden barrel may flow into said second wooden barrel;

c. pumping means for pumping water from said second wooden barrel to said first wooden barrel;

d. a tubular conduit which is fluidly coupled to said pumping means;

e. a dispersal nozzle including a flat plate and a hollow truncated-conical member which is fluidly coupled to said tubular conduit and which is also fluidly coupled to said outlet, which is formed by a plurality of bores in the sidewall of said first wooden barrel; where said pumping means recirculate water from said second wooden barrel to said first wooden barrel;

f. one half of a third wooden barrel which is disposed at a third level which is intermediate the first level of said first wooden barrel and the second level of said second wooden barrel and which is also disposed so that water



from said output of said first wooden barrel flows into said third wooden barrel, said third wooden barrel having an outlet for water; and

g. out-flowing means for allowing water to out-flow from said third wooden barrel into said second wooden barrel, said out-flowing means fluidly coupled to said output of said third wooden barrel, said flow guide including a pair of parallel trapezoidal plates, a top plate which is coupled to the peripheral edge of each of said pair of parallel trapezoidal plates and a flange which is coupled to the bottom edge of each of said pair of parallel trapezoidal plates, said flow guide is fluidly coupled to said outlet, which is formed by a plurality of bores in the sidewall of said third wooden barrel, and overflow controlling means for controlling the water level in said third wooden barrel so that the water does not overflow therefrom, said overflow controlling means being fluidly coupled to said second wooden barrel.

4,281,795

JET PIPE ARRANGEMENT FOR AIRCRAFT PROPULSION AND CONTROL

Ludwig Schweikl, Moosburg, Fed. Rep. of Germany, assignor to MTU Motoren-und-Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 17,275

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809169

Int. Cl.³ B64C *15/02*

U.S. Cl. 239—265.35 **38 Claims**

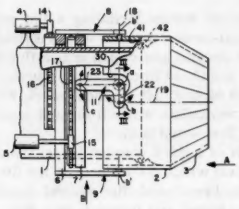
1. Jet pipe arrangement for propulsion and control of an aircraft or the like, comprising:

a relatively stationary first pipe section,

a second pipe section fitted with a thrust nozzle and disposed downstream of said first pipe section for multi-directional rotation to control the direction of expulsion of thrust gases through said thrust nozzle,

and actuation element means attached to the first pipe section and including means for imparting relative movement to said second pipe section with respect to said first pipe section, said actuation element means including angle lever means interconnecting said first and second pipe

sections in such a way that said second pipe section is pivotable selectively about either one or both of respective horizontal and vertical pivot axes through said second pipe section, wherein said angle lever means includes a



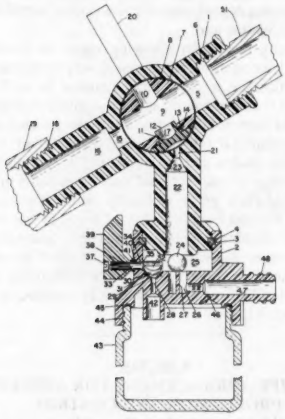
plurality of angle levers which are rotatably located on the first pipe section at their respective fulcrums, all fulcrums being preferably in a plane which perpendicularly intersects the extended engine or jet pipe longitudinal axis.

4,281,796

BATHROOM MIXING DEVICE

Elmer G. Fugent; Ruby M. Fugent, both of 10716 Ave Compadres; Shirley Kraus, and Wolfgang Kraus, both of 17346 Flame Tree, all of Fountain Valley, Calif. 92708

Filed Mar. 15, 1979, Ser. No. 20,938
Int. Cl.[3] B05B 7/26
U.S. Cl. 239—310 **4 Claims**



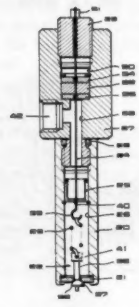
1. In a device of the class herein described, a main structural body containing provisions at one end for attachment to a standard plumbing outlet, and provisions at the opposite end for attachment of a common shower head, or the like, and having internal passages through both ends communicating with a cylindrical chamber near the center, a revolvable cylinder located within the cylindrical chamber having a main passage, and a double acting seal that, when fluid pressure is applied to the seal from either one of two directions, shall efficiently stop the flow of liquids at that point, a small vertical passage communicating with the cylindrical chamber at one end and a larger vertical passage at the other end, a ball, free to move vertically through the larger vertical passage to a cone formed at, and by, the juncture of the larger and smaller vertical passages, a secondary structural member attached to the main structural body and containing a chamber and having a well within the chamber, wherein a vertical post is located at the center of the well, and directly beneath the larger vertical passage of the main body, a small vertical passage communicating with the chamber and a mixing container, a small lateral passage communicating with the well at one end and opening into a larger lateral outlet passage at its opposite end, a small vertical passage communicating with the container at one end and entering into, but perpendicular to the larger lateral outlet passage.

4,281,797

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Kei Kimata, Aichi; Masatoshi Kaneko, Iwata; Shoichi Fukunaga, Iwata; Toshiharu Kato, Iwata; Takeshi Ikeda, Iwata, and Atsuo Suzuki, Kakegawa, all of Japan, assignors to NTN Toyo Bearing Company, Limited, Osaka, Japan

Filed Jul. 26, 1978, Ser. No. 928,152
Int. Cl.[3] F02M 61/08
U.S. Cl. 239—533.12 **3 Claims**



1. An automatic valve-type fuel injector comprising:

an elongated body having a longitudinally extending bore formed therein and a fuel inlet port communicating with the bore;

a valve element having a hemispherically-shaped head portion and a stem portion to the leading end of which the head portion is joined;

a valve seat fixed to the leading end of the bore and having a central aperture through which the stem portion of the valve element extends with an ample clearance therebetween for the passage of fuel and which is provided with an annular edge for the fuel-tight contact during non-injection period with the cooperating hemispherical surface of the head portion of the valve element;

an adjusting rod extending through the bore to project beyond the rear thereof;

a tension spring provided at its opposite ends with hooks which engage with the rearward end of the stem portion of the valve element and leading end of the adjusting rod, respectively;

a seal member housed in a rearward end of the bore and receiving the adjusting rod in a fuel-tight fashion;

a locking member disposed outside the body for locking the adjusting rod at its desired longitudinal position so as to set the force of the tension spring that determines the valve opening pressure; and

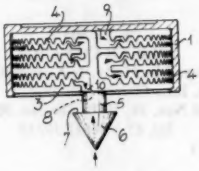
an adjusting screw having a screw thread on its outer periphery engaging a complementary screw thread formed at the rearward end of the bore in the body, said adjusting screw having a central aperture through which the adjusting rod extends and bearing on its outer end surface said locking member.

4,281,798

DRIP OR TRICKLE EMITTER

Noam Lemelstrich, Industrial Zone, Netanya, Israel

Filed Sep. 7, 1979, Ser. No. 73,313
Claims priority, application Israel, Sep. 7, 1978, 55533
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—542 **8 Claims**



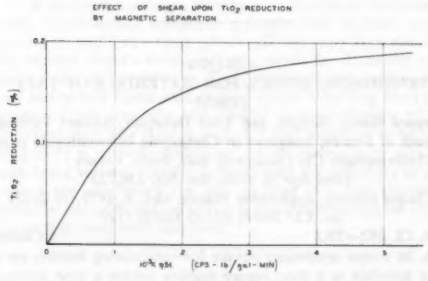
1. A drip or trickle emitter device of outwardly pill-box like appearance, the said device consisting of a first and outer cylindrical cup shaped body and a second inner equally cup shaped body, with both cup shaped bodies having one open side, the inner wall of the first cup shaped body forming a truncated conical space of slight conicity, the second cup shaped body being designed, shaped and dimensioned to be force-fittable into the first cup shaped body, and the open sides of the two cup shaped bodies facing opposite directions, one of the bodies having in its wall a tortuous, continuous groove ascribing multiple bows and bends and forming with the wall of the other body a flow path, a circular groove being provided in the top wall of the said outer cup shaped body into which circular groove the edge of the inner cup shaped body fittingly enters, the assembled device being provided with an inlet into the device and an outlet therefrom.

4,281,799

PROCESS FOR IMPROVED MAGNETIC BENEFICIATION OF CLAYS

Robin R. Oder, San Francisco, Calif., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation of Ser. No. 727,277, Sep. 27, 1976, abandoned, which is a continuation of Ser. No. 580,396, May 23, 1975, abandoned, which is a continuation of Ser. No. 405,487, Aug. 8, 1974, abandoned. This application Apr. 6, 1979, Ser. No. 27,641
Int. Cl.³ B02C *23/18*; B03B *1/04*
U.S. Cl. 241—24 **1 Claim**



1. The method for removing discolorants from a crude clay by a process including a step of separating weakly magnetically susceptible minute contaminant particles including titanium dioxide from an aqueous clay-water slurry containing said particles in minor concentration with substantially non-magnetic minute mineral particles by subjecting said slurry to magnetic separation in a magnetic field; the improvement comprising reducing the titanium dioxide content of the said clay by:

(a) mechanically working said clay-water slurry by application of means to produce a force selected from the group consisting of shear forces, impact forces, kneading forces and combinations of two or more of said forces, at a viscosity n in centipoises (cps), a solids content s in pounds per gallon (lg./gal.), and for a time t in minutes (min.) such that the factor nst has a value in the range of 0.335×10^{-3} to 5.33×10^{-3} (cps.-lb./gal.-min.) to release the contaminant particles including said titanium dioxide to be removed from said slurry;

(b) dispersing said clay-water slurry to disperse said contaminant particles to facilitate said magnetic separation; and

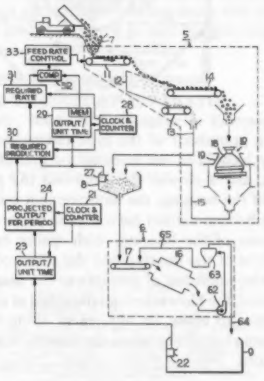
(c) thereafter, magnetically separating said clay-water slurry in a manner to reduce the titanium dioxide content of said clay.

4,281,800

OPERATION OF ASSOCIATED CRUSHING PLANT AND MILL

Malcolm D. Flavel, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 2, 1979, Ser. No. 90,657
Int. Cl.³ B02C *21/00, 25/00*
U.S. Cl. 241—24 **11 Claims**



1. A method of operating a comminuting facility including a crushing plant (**5**) to which unprocessed material is fed and by which the material is delivered to a delivery zone (**8**) as crushed product, and a grinding mill (**6**) to which said crushed product is fed and which reduces the same to final product (at **9**), said method providing for optimum utilization of the capacities of the facility and of the power available to it and comprising the steps of:

A. controlling the grinding mill (**6**) to produce final product at the maximum rate that is within its existing capabilities while constantly consuming the maximum amount of power available to it;

B. controlling the crushing plant (**5**) to cause it

(1) to deliver crushed product to the delivery zone (**8**) at substantially the rate at which unprocessed material is fed to it, and

(2) to constantly consume the maximum amount of power available to it;

C. ascertaining at timed intervals (as by **21**, **22**, **23**) the then prevailing rate at which the grinding mill (**6**) is producing final product; and

D. feeding unprocessed material (as by **11**) to the crushing plant (**5**) at a rate such that the projected quantity of crushed product that would be delivered to the delivery zone (**8**) at the end of an extended period if said rate were

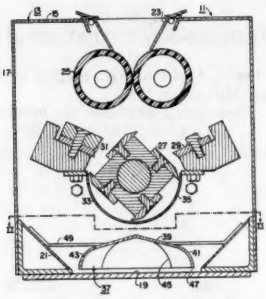
maintained to the end of that period would equal the projected quantity of final product that would be produced by the grinding mill (6) by the end of the same extended period if the grinding mill (6) were to maintain its then prevailing rate of production of finished product to the end of said period.

4,281,801

GRANULATOR WITH FALSE BOTTOM COLLECTION CHAMBER

Frank Parker, and Leslie M. Parker, both of Old Brandon Rd., Hillsboro, Tex. 76645

Filed Nov. 5, 1979, Ser. No. 91,358
Int. Cl.³ B02C *18/22*
U.S. Cl. 241—222 **8 Claims**



1. In a granulator of the type having a housing, a cutter assembly located in the housing for granulating objects into particles, and a blower for removing the particles from the bottom of the housing, the improvement comprising:

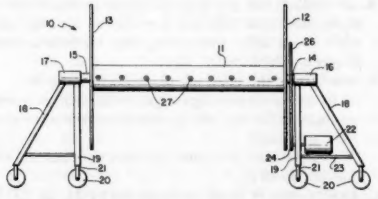
a false bottom carried between the cutter assembly and the bottom of the housing, with spaces being between the bottom of the housing and the edges of the false bottom for the admission of particles to the space below the false bottom, the blower being positioned at one end of the false bottom to cause air movement along the length of the housing bottom between the housing bottom and the false bottom.

4,281,802

THERMAL ICE CAP

William G. Burley, Johnstown, Pa., assignor to T.I.C. Enterprises, Limited, Johnstown, Pa.

Filed Apr. 15, 1980, Ser. No. 140,500
Int. Cl.³ B65H *75/02, 17/48*
U.S. Cl. 242—55 **28 Claims**



1. A thermal cover for the exposed ice surface of a rink or the like comprising:

a generally rectangular sheet of flexible material having a length substantially equal to the length of said ice surface;

attachment means disposed on a surface of said sheet along a portion of a line perpendicular to the long dimension of said sheet at substantially the mid-point thereof, and

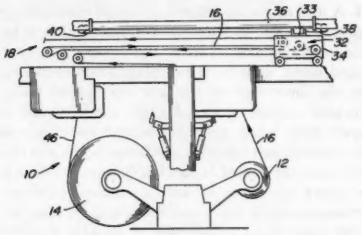
orifice means disposed along the remaining portion of said line, said orifice means spaced so as to correspond to the spacing of said attachment means whereby said attachment means project through said orifice means when said sheet is folded lengthwise.

4,281,803

SPLICER CONTROL

William A. Massey, Mt. Holly, N.J., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Nov. 19, 1979, Ser. No. 95,846
Int. Cl.³ B65H *19/18*
U.S. Cl. 242—58.1 **22 Claims**



1. Apparatus for controlling a splicer machine which splices a web from a running roll to a web from a reserve roll, said splicer machine including a festoon for storing an amount of web from the running roll, comprising:

means for reducing the speed at which web is drawn from the running roll at a rate **R1** from an initial speed V in response to a splice command signal, said rate **R1** being proportional to the square of said initial speed V,

means for generating a web speed signal indicative of whether the speed at which web is drawn from said running roll has reached substantially zero speed,

means for generating a splice initiate signal in response to said web speed signal, actuating thereby the splicer machine to splice the web from the running roll to the web from the reserve roll, and

means for increasing the speed at which web is drawn from the reserve roll at a rate R2 up to the initial speed V.

4,281,804

TENSIONING DEVICE FOR MATERIALS OF TAPE FORM

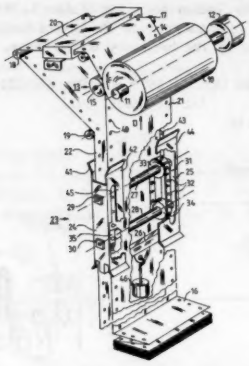
Bernard Badet, Belfort, and Yves Dekeyser, Salbert Valdoie, both of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull, Paris, France

Filed Apr. 9, 1980, Ser. No. 138,723
Claims priority, application France, Oct. 5, 1979, 79 26531
Int. Cl.³ B65H *23/10*; G03B *1/24*
U.S. Cl. 242—75.2 **6 Claims**

1. In a tape tensioning device for maintaining tension on a tape installed in a loop return fashion within a tape driving mechanism, said tape including a first free section arranged to enter the driving mechanism and a second free section arranged to leave the driving mechanism, the improvement comprising:

a floating displacement transmission element for transmission of displacement disposed between the two free sections of said tape to enable the section emerging from the driving mechanism to be driven via this floating element

by the section which enters into the driving mechanism; and



tensioning means for said element arranged to cause said floating element to exert a pull on the sections entering and leaving the driving mechanism.

4,281,805

APPARATUS AND METHOD FOR COILING A MOVING WEB

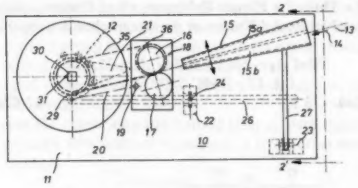
Leo N. Vackier, 's-Gravenwezel, and Lucien P. van der Vliet, Hoboken, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 14, 1979, Ser. No. 94,353

Claims priority, application United Kingdom, Nov. 17, 1978, 44937/78

Int. Cl.³ B65H *27/00*

U.S. Cl. 242—76 **13 Claims**



1. A device for coiling a moving web or strip onto a rotating core, which device comprises a frame, core support means carried by said frame upon which said core may be positioned for rotation about a horizontal axis, means for imparting rotation to said supported core, freely flexible means anchored at one end to said frame, said flexible means extending from said anchored end generally tangentially to the underside of the core periphery and then up and over said periphery to be held by gravity in partially encircling contact therewith or with the web being wound, thereby defining with the periphery of said core a nip into which the leading edge of a web travelling between said core and said flexible means is directed for winding engagement with said core.

4,281,806

FISHING LEADER STORAGE REEL

Edward D. McMullen, El Sobrante, Calif. 94803

Continuation-in-part of Ser. No. 924,156, Jul. 13, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 79,714

Int. Cl.³ B65H *75/28*

U.S. Cl. 242—125.1 **8 Claims**

6. A reel assembly on which to wind pretied fishing leaders comprising a reel and a housing, said reel including means to snap-fit with said housing when said reel is inserted into said housing, said snap-fit enabling rotation of said reel within said housing, said reel comprising an inner and outer wall interconnected by a plurality of posts for winding of said leaders thereabout, said posts being equally spaced from and about the center axis of said reel, said housing including a peripheral wall surrounding an end wall and said reel inner wall having an axial protrusion in rotatable fit with said end wall of said housing when installed therein for providing rotatable support for said reel at such point of rotatable fit, said peripheral housing wall including a slot for exposing said reel within, and a barbless hook having a stem with means for anchoring said hook at its stem to said peripheral wall of said housing with said hook in proximity to said peripheral slot, whereby, pretied leader may be fed through said slot for winding upon said posts and a free end of said leader anchored to said barbless hook.

4,281,807

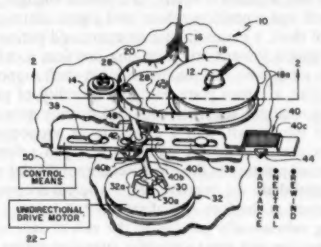
WEB TRANSPORT APPARATUS

Donald O. Easterly, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 3, 1980, Ser. No. 126,733

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—206 **9 Claims**



7. Web transport apparatus for advancing a web and for winding the web onto a reel having a flange, said apparatus comprising:

(a) a rotatable pressure roller;

(b) a spindle for receiving the reel;

(c) a driving member supported for rotational movement and movement to (1) a first position for driving the web between itself and said pressure roller, (2) a second position for rotatively driving the reel to wind the web onto the reel, and (3) a third position removed from said first and second positions;

(d) a unidirectional drive motor conditionable for rotatively driving said driving member;

(e) means for coupling said drive motor to said driving member for permitting said driving member to be rotatively driven by said drive motor and for permitting said driving member to be displaced to said first, second and third positions, said coupling means including a generally ball-shaped portion with at least one protrusion and a

receptacle portion adapted to receive said ball-shaped portion with said protrusion;

(f) selector means for selectively moving said driving member to said first, second and third positions; and

(g) control means coupled to said selector means and said drive motor for conditioning said drive motor to rotatively drive said driving member when said driving member is positioned by said selector means in either of said first and second positions.

4,281,808

FISHING REEL

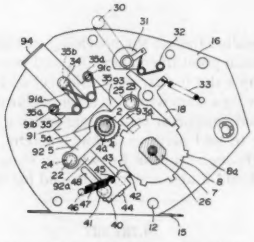
Hideo Noda, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Dec. 17, 1979, Ser. No. 104,434

Claims priority, application Japan, Dec. 30, 1978, 53-183727[U]

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—218 **4 Claims**



1. In a fishing reel including a stationary member fixed to a fishing rod, a spool shaft supported rotatably to said stationary member, a spool rotating together with said spool shaft, a pinion being positioned on said spool shaft and slidably movable between a position where said pinion engages with said spool shaft and a position where said pinion disengages from said spool shaft, a pinion holder carrying said pinion and biasing said pinion toward said engaging position, a driving gear always in mesh with said pinion, an input shaft supporting said driving gear, a return plate having a plurality of projections and being rotatable together with said driving gear integrally with said input shaft, and a clutch lever supported to said stationary member slidably movably between a first position and a second position in the direction perpendicular to the axis of said spool shaft, the improvements wherein are provided; an arm disposed at the fore end of said clutch lever; a pivot pin extending substantially parallel to the axis of said spool shaft and supporting said arm swingably; engaging means provided at said arm and engageable with one of said projections at said return plate; and a first stopper means and a second stopper means for restricting said arm in its swinging range, both said stopper means being provided at said arm, extending toward said clutch lever, and engaging therewith; and a spring member being disposed between said arm and said stationary member at an intermediate position between two positions of said pin movable together with said clutch lever, the two positions corresponding to the first and second positions of said clutch lever, so that until said clutch lever moves forward from the first position beyond an intermediate position between the first and second positions, said spring member biases said arm in the direction of allowing said first stopper means to engage with said clutch lever to thereby keep said engaging means away from a circular locus of rotation of said projections at said return plate, and after said clutch lever moves beyond said intermediate position, said spring member is switched in its working direction to swing said arm and engage said second stopper means with said clutch lever, thereby allowing said engaging means to enter in said circular locus of rotation of said projections.

4,281,809

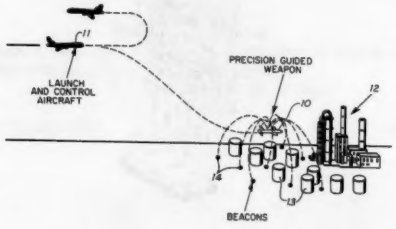
METHOD OF PRECISION BOMBING

Frank P. Oglesby, Indianapolis, and Walter L. Wuster, Greenwood, both of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 13, 1979, Ser. No. 102,721

Int. Cl.³ F41G *7/00*

U.S. Cl. 244—3.16 **7 Claims**



1. A method of attacking a plurality of targets comprising,

first launching at a primary target a precision guided explosive weapon carrying at least one signal beacon,

then separating said at least one signal beacon to land in a position near said primary target, then detonating said explosive weapon, and

then launching at least one weapon having a guidance system which will home on said at least one signal beacon.

4,281,810

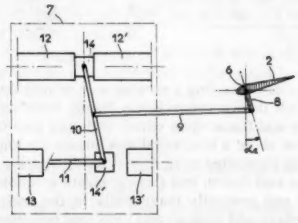
PROCESS AND AN INSTALLATION FOR THE CONTROL OF THE EFFICIENCY OF THE AERODYNAMIC SURFACES OF AN AIRCRAFT

Philippe Poisson-Quinton, Paris; Amedee P. Bevert, Nice, and Hung Le Thuy, Le Plessis-Robinson, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, France

Filed Apr. 19, 1979, Ser. No. 31,598

Int. Cl.³ B64C *5/00, 13/00*

U.S. Cl. 244—75 R **12 Claims**



1. Apparatus for controlling the operation of an aerodynamic surface on an aircraft, comprising:

means for mounting an aerodynamic surface on an aircraft to assume variable orientation with respect thereto;

means for controlling the orientation of said surface with respect to the aircraft;

means for connecting said controlling means to said surface comprising a first pivot member and linkage means pivotally connected to said first pivot member for permanently linking said controlling means to said surface;

means for selectively blocking said first pivot member with respect to the aircraft to establish, in a blocking condition, a steerable connection between said controlling means and said surface to operate the same in a controlled mode, and

to disable such connection, in a nonblocked condition thereof, to let said surface operate in a freely floating mode; and said selective blocking means includes a pair of oppositely movable jacks on either side of said first pivot member to block said first pivot member with respect to the aircraft by moving said jacks into engagement with said first pivot member, in the blocked condition thereof.

4,281,811

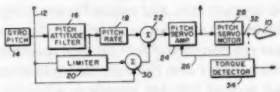
PITCH TRIM SYSTEM FOR AIRCRAFT

John M. Nixon, Mineral Wells, Tex., assignor to Edo-Aire Mitchell, Mineral Wells, Tex.

Filed Jun. 15, 1979, Ser. No. 48,788

Int. Cl.³ G05D 1//10

U.S. Cl. 244—178 **19 Claims**



1. An automatic trim system for aircraft having a control surface and a trim surface associated with the control surface for changing the effect of the control surface to maintain a desired flight attitude, comprising:

limiter means responsive to an input signal and generating a limited authority trim control signal having a preselected maximum amplitude,

gating means responsive to the input signal and having a control input, said gating means generating a primary trim control signal varying with the input signal in accordance with a control signal applied thereto,

control means responsive to the input signal and generating the control signal, and

means for combining the limited trim control signal and the primary trim control signal into a trim servo motor drive voltage.

4,281,812

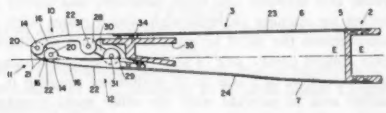
TRANSVERSE DRIVING BODIES, PARTICULARLY AIRPLANE WINGS

Herbert Zimmer, Friedrichshafen, Fed. Rep. of Germany, assignor to Dornier GmbH, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,713

Int. Cl.³ B64C 3/48

U.S. Cl. 244—219 **8 Claims**



1. In a transverse driving body, particularly an airplane wing having a variable profile form and a displacing mechanism,

the improvement comprising a plurality of link band means forming the front wing part, each of said link band means including bearing segment means and link band segment means,

said link band means including at least three link band parts which are portions of the upper wing profile, lower wing profile and wing nose,

said segments of said link band means having different curvatures with said bearing segment having a smaller radius of curvature than said band segment,

and means adapted to act in conjunction with said displacing mechanism whereby said link band means can be selectively adjusted into different positions with respect to incident flow to provide at least one position where said wing has a low profile and small camber and at least one displaced position where said wing profile is increased and said wing camber is increased;

said bearing segment of said upper wing profile forming the leading edge in said one position and said band segment of said wing nose forming the leading edge in said displaced position.

4,281,813

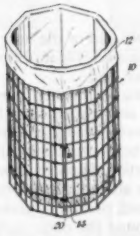
BAG HOLDER

John J. Garrity, 425 San Mateo Dr., Palm Springs, Fla. 33461

Filed Oct. 16, 1979, Ser. No. 85,249

Int. Cl.³ A63B 55/04

U.S. Cl. 248—97 **6 Claims**



1. A bag holder for holding a bag with the mouth open and the bottom of the bag on the ground, comprising:

a body including at least five sections,

each said section having a general flat shape, said sections movably connected to one another to form a cylindrical shaped body;

said body in said cylindrical shape having an upper bag holding edge;

said body having a first vertical edge and a second vertical edge, said body shaped and constructed for movement of said first vertical edge to and away from said second vertical edge to provide for transverse movement of a full bag;

said body being positioned in a cylindrical form to form a first mouth a said upper bag holding edge for receiving and holding a bag fully opened by contact along said bag holding edge of said body whereby the bag can be filled from the top without supporting the bag, and a second mouth at the bottom of said body which allows the bottom of the bag to be supported by the ground;

a releasable connecting means attached to said first vertical edge and attachable to said second vertical edge of said body, said releasable connecting means for forming and closing a transverse mouth that may be opened and closed for lateral removal of the bag without lifting the bag.

4,281,814

COVER ASSEMBLY

Richard H. Verwey, Pontiac, Mich., assignor to Con-Trol Ltd. Inc., Pontiac, Mich.

Filed Feb. 7, 1980, Ser. No. 119,306

Int. Cl.³ A63B 55/04

U.S. Cl. 248—97 **6 Claims**

1. A cover assembly for a hamper, said open at one end, said

liner being insertable over said frame rim, said cover assembly further comprising:

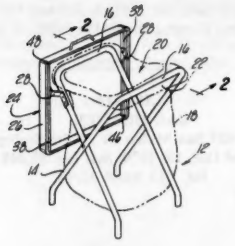
a pair of elongated mounting brackets,

means for securing one end of each bracket to the frame at a position spaced downwardly from the frame rim,

a substantially planar lid,

a pair of elongated spaced and parallel tracks secured to said lid,

a block rotatably secured to the other end of each bracket, each block being slidably mounted to one of said tracks and movable between a first position and a second position, wherein in said first position said lid extends over and



covers the open end of the liner and wherein in said second position said lid is spaced from and exposing the open end of the liner, and

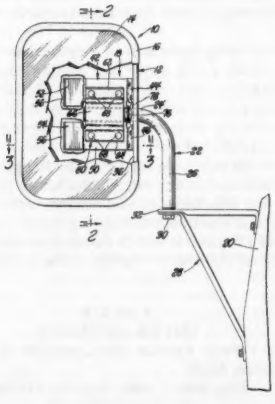
wherein each bracket further comprises a pair of substantially parallel and spaced apart legs and a flared portion extending between and connecting said legs, one leg of each bracket being rigidly secured to said frame so that said flared portion is spaced downwardly from the top of the frame rim and so that the other bracket leg extends above said flared portion whereby a lip of the liner can be positioned around the outer periphery of said frame rim between said rim and said other bracket legs.

4,281,815

MIRROR MOUNTING BRACKET

Lawrence E. O'Connell, Doylestown, and Raymond L. Hanisco, Lansdale, both of Pa., assignors to Delbar Products, Inc., Perkasie, Pa.

Continuation of Ser. No. 963,878, Nov. 27, 1978, abandoned.
This application Feb. 20, 1980, Ser. No. 122,978
Int. Cl.[3] B65D *63/00*
U.S. Cl. 248—479 **9 Claims**



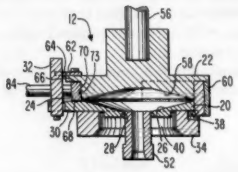
1. A mirror head assembly including a hollow shell having an open face, a peripheral rim formed about the open face of said shell, a mirror element mounted in the open face of said shell and retained therein by said rim, said shell including a first wall extending rearwardly from said rim and being generally perpendicular to said mirror element, said shell including a second wall projecting from the rearmost end of said first wall and terminating at said peripheral rim, an opening formed in said first shell wall, a cylindrical support arm extending through said shell opening, a bracket structure mounted within said shell for adjustably supporting said shell upon said support arm, said bracket structure comprising a first member having a base portion fixed to the first wall of said shell, an elongated planar portion extending normally to said base portion, means bonding the elongated portion of said first member to said second shell wall, the elongated portion of said first bracket member including an offset cylindrical section concentrically disposed to said support arm, said bracket structure including a second member having a pair of transversely spaced planar portions and an intermediate cylindrical section concentrically disposed to said support arm, and means for securing the planar portions of said second member in abutting relationship to the elongated planar portion of said first bracket member to clampingly engage the support arm between the cylindrical sections of said first and second bracket members whereby said shell may be rotatably adjusted about said support arm.

4,281,816

AUTOMATIC APPARATUS FOR MOLDING A PREFORM

Charles B. Carre.., Trenton; Frederick C. Schaller, Lincroft, and Ernest A. Beres, Robbinsville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1979, Ser. No. 102,620
Int. Cl.[3] B29D *17/00*; **B29F** *1/022*
U.S. Cl. 249—82 **13 Claims**



1. A preform molding apparatus including a mold cup which comprises:

a pair of mold members mounted with a surface of each opposing a surface of the other, each of said mold members having a concave mold recess in its said opposing surface,

a carrier arm between said mold members, said carrier arm having an opening therethrough which mates with and compliments the mold recesses in the mold members to form a mold cavity, one of said mold members having at least a portion of a size to fit within the opening in the carrier arm to provide with the other mold member a mold cavity smaller in volume than the volume of the preform to be molded,

a molding material inlet opening in one of said mold members opening into the bottom of the recess in the said one mold member, and

means for moving said mold members toward and away from each other and the carrier arm transversely across and away from the mold members.

4,281,817

DISC VALVE

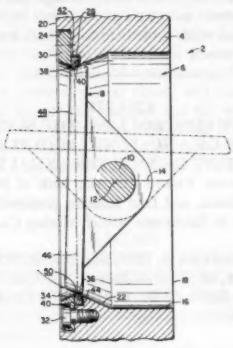
Horst Adams, Bochum-Stiepel, and Rudolf Koenen, Herne, both of Fed. Rep. of Germany, assignors to Gebruder Adams Armaturen u. Apparate GmbH & Co. K.G., Bochum, Fed. Rep. of Germany

Continuation of Ser. No. 954,052, Oct. 23, 1978, abandoned. This application Sep. 22, 1980, Ser. No. 189,270

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810373

Int. Cl.³ F16K *1/226*

U.S. Cl. 251—305 **33 Claims**



1. In a disc valve of the type having a housing including a valve conduit defining a main axis of the valve, a seal ring carried by the housing and having a sealing surface, a valve disc defined by opposing, spaced apart end faces and a seating surface interconnecting the end faces and arranged for sealingly engaging the sealing surface of the seal ring when the disc is in its closed position, and means for pivotally moving the disc about a pivot axis which is offset from and perpendicular to the main valve axis between a closed position in which the seating surface engages the sealing surface and an open position in which the disc is generally parallel to the main valve axis, the improvement to the sealing surface and the disc comprising in combination: a sealing surface at least a portion of which defines a conical surface which is coaxial with respect to the main valve axis; the seating surface of the disc having a conical shape which includes the conical shape of said portion of the sealing surface and which is arranged so as to be co-axial with the main axis when the disc is in the closed position in which the sealing surface and the seating surface are in mutual contact in a plane perpendicular to the main valve axis; the disc including generally parallel faces which are slanted relative to the axis of the conically shaped seating surface by an angle which lies in a plane that is substantially perpendicular to the pivot axis and includes the main valve axis, the angle being further arranged so that it trails the closing motion of the disc to prevent a premature contact between the disc and the ring as the disc moves from its open into its closed position.

4,281,818

REPLACEABLE ADJUSTABLE BUTTERFLY VALVE SEAT

John P. Cunningham, Narragansett, and Dezso Szilagyi, Cranston, both of R.I., assignors to General Signal Corporation, Stamford, Conn.

Filed May 29, 1980, Ser. No. 154,545

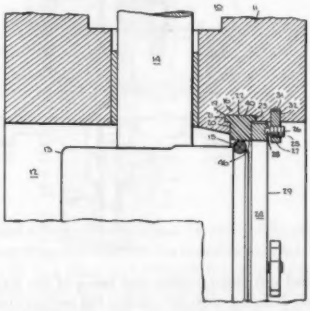
Int. Cl.³ F16K *1/22*

U.S. Cl. 251—307 **5 Claims**

1. In a butterfly valve including a body containing a through flow passage, and a pivoting disc which cooperates with a seat to control flow through the passage, an improved seat arrangement which comprises

a. a continuous annular groove formed in the wall of said passage and encircling the axis of the passage, said continuous annular groove including an end wall, a first and second transverse walls, said first transverse wall extending into said passage, and an annular recess in said first transverse wall;

b. an elastomeric seat ring including a first axially extending portion on one side of said seat ring, a second axially extending portion on the other side of said seat ring, and a radially inwardly extending portion, said seat ring mounted in and filling the groove, said radially inwardly extending portion having an inner peripheral surface which serves as a seating surface for the disc and first and second transverse end faces at opposite sides of the seating surface, the first end face conforming to and bearing against said first transverse wall of the groove, said first axially extending portion extending into said annular recess, and said second axially extending portion extending in said groove and engaging said second transverse wall;



c. an endless clamping ring having a smaller outer diameter than the inner diameter of said passage and formed with a first clamping face which is concentric to said second axially extending portion of said seat ring and a second clamping face which conforms to and engages said second end face of said radially inwardly extending portion of said seat ring;

d. a plurality of individual actuators spaced from one another in the direction of the circumference of the clamping ring and serving to force the clamping ring axially and thereby compress selected portions of the seat ring between the first transverse groove wall and the second clamping face and produce selective bulging of the seating surface;

e. each actuator including a screw threaded element which reacts between a portion of the clamping ring and a removable transverse member which extends outward from the wall of said passage into said passage.

4,281,819

BALANCED STEM GATE VALVE

Morris B. Linder, 1403 W. Brooklake Dr., Houston, Tex. 77077

Continuation-in-part of Ser. No. 889,271, Mar. 23, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 86,609

Int. Cl.³ F16K *3/02*

U.S. Cl. 251—328 **1 Claim**

1. A gate valve mechanism comprising:

a valve body having a valve chamber and inlet and outlet flow passages in communication with said valve chamber, annular seat carrier recess means being defined within said valve body about said flow passage means and forming a first annular abutment surface of generally planar configuration;

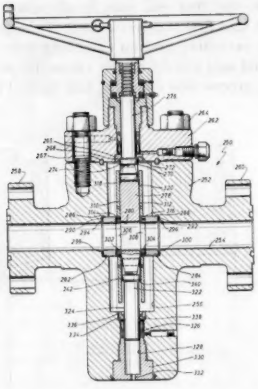
gate means being movably disposed within said valve chamber and being movable between open and closed positions

for controlling the flow of fluid through said flow passages;

means for imparting opening and closing movement to said gate means;

annular hard metal seat carrier means being disposed in interference-fitted relation within said seat recess means and defining a second annular abutment surface of generally planar configuration and an annular seat recess, said first and second abutment surfaces being oriented in substantially parallel relation;

a substantially dead soft metal sealing ring being positioned within said seat carrier recess means and being in engagement with said first and second abutment surfaces, said



dead soft metal sealing ring being of flat washer-like form and defining opposed annular flat surfaces being deformed by compressive engagement against said first and second abutment surfaces and establishing a seal between said valve body and said seat carrier means;

a hard, wear resistant seat element being positioned within said seat recess and having sealing engagement with said gate means, said seat element cooperating with said seat carrier means to define an annular seal pocket therebetween; and

annular resistant sealing means being disposed within said seal pocket and establishing a seal between said seat carrier means and said seat means.

4,281,820

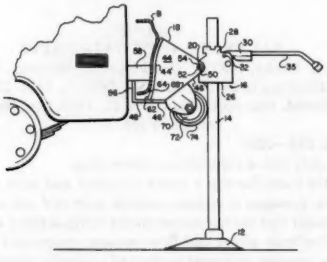
LIFTING JACK FOR VEHICLES OR THE LIKE

Coy J. Martin, P.O. Box 1811, Hickory, N.C. 28601

Filed Dec. 26, 1979, Ser. No. 107,444

Int. Cl.³ B66F *3/00*

U.S. Cl. 254—133 R **8 Claims**



1. In a lifting jack of the type having an upright jack shaft and load lifting means supported on and operably associated with said shaft for vertical movement therealong, the improvement comprising a load engaging member pivotably affixed to said load lifting means generally vertically centrally thereof for movement therewith along said shaft and engagable with a load to be moved vertically to effect vertical movement of such load, said load engaging member having affixed thereto and extending therefrom a stabilizing torque arm having a bearing portion thereon for bearing engagement of said upright jack shaft and moveable along said shaft in such bearing engagement therewith upon vertical movement of said load lifting means therealong to substantially isolate the effect of the torque created during loading to said load engaging member and direct such torque to said shaft through said stabilizing arm thereby substantially preventing rotational movement of said load lifting means with respect to said shaft and reducing the friction therebetween.

4,281,821

METHOD OF CONTROLLING THE SUCTION GAS PRESSURE OF A SULFURIC ACID PLANT FOR TREATMENT OF SMELTER EXHAUST GAS

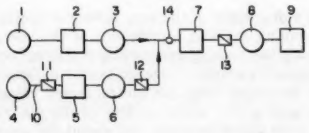
Masayuki Kawazoe; Yasuro Tomoda, both of Niihama; Atsuo Sasaki, Yokohama, and Isao Kaneko, Sagamihara, all of Japan, assignors to Sumitomo Metal Mining Co., Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,507

Claims priority, application Japan, Oct. 7, 1978, 53/123796

Int. Cl.³ B01D *49/00;* **C01B** *17/72;* **C22B** *1/06*

U.S. Cl. 266—44 **2 Claims**



1. In a system which includes an intermittently operating converter furnace, a constantly operating smelting furnace, a sulfuric acid-producing stage, a converter furnace exhaust gas flue for leading exhaust gases from the converter furnace away therefrom via a converter furnace exhaust gas fan, a smelting furnace exhaust gas flue for leading exhaust gases from the smelting furnace away therefrom via a smelting furnace exhaust gas fan, wherein said exhaust gas flues join together and a further gas flue leads to generated exhaust gases, sequentially through a gas-cleaning stage, a sulfuric acid plant main blower, and onto said sulfuric acid-producing stage, wherein a first damper is provided in the converter furnace exhaust gas flue between the converter furnace exhaust gas fan and the location where said exhaust gas flues join together, wherein a second damper is provided in the further gas flue between the gas-cleaning stage and the sulfuric acid plant main blower, and wherein a gas pressure transmitter is located on the further gas flue between the location where said exhaust gas flues join together and said gas-cleaning stage, the method of controlling the suction gas pressure in said further gas flue such that the rotation speed of the sulfuric acid plant main blower and the degree of the opening of the second damper are controlled automatically so as to maintain a predetermined value by signals from the gas pressure control unit wherein:

(A) When the converter furnace operation is commenced, in sequence: the first damper is opened, the rotational speed of the sulfuric acid plant main blower is increased, the degree of the opening in the second damper is reduced such that the gas pressure in the further gas flue between the location where the exhaust gas flues join together and the gas-cleaning stage will maintain a constant value, the blowing of air through the converter furnace is started, the degree of the opening in the second damper is made larger such that an increase in the gas pressure in said

further gas flue will be compensated for and be maintained at a predetermined value, and the degree of the opening in the second damper and the rotation speed of the sulfuric acid plant main blower are controlled so as to maintain a predetermined gas pressure in the further gas flue when both the converter furnace and the smelting furnace are in normal operation,

(B) When the converter furnace operation is stopped, in sequence: the degree of the opening in the second damper is reduced such that the gas pressure in said further gas flue will maintain a constant value, when the amount of exhaust gas entering from said converter furnace exhaust gas flue is decreased, the first damper is closed, the rotation speed of the sulfuric acid plant main blower is reduced, the degree of the opening in the second damper is made larger such that an increase in the gas pressure in said further gas flue will be compensated for and be maintained at a predetermined value, and the degree of the opening in the second damper and the rotation speed of the sulfuric acid plant main blower are controlled so as to maintain a predetermined gas pressure in the further gas flue when only the smelting furnace is in normal operation.

4,281,822

DEVICE FOR CUTTING A WORK PIECE MANUFACTURED IN A CONTINUOUS CASTING PLANT

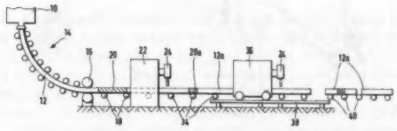
Karlheinz Möller, Obertshausen, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,509

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842503

Int. Cl.³ B23K *7/00*

U.S. Cl. 266—50 **4 Claims**



1. In a device for cutting a work piece such as a slab or block manufactured continuously in a continuous casting plant wherein said device has both a flame cutting device for cross cutting and another flame cutting device for longitudinal cutting, the improvement being that said longitudinal cutting device being downstream from said continuous casting plant as seen in the direction of the work piece discharge from said plant, said traversal cutting device for the cross cutting of the work pieces into bands being installed immediately downstream from said longitudinal cutting device, laterally mounted preheating torches being installed on said longitudinal flame cutting device, and the cutting torches of said longitudinal flame cutting device being connected with a lateral guide roller which is in contact with the lateral surface of the continuously moving work piece.

4,281,823

TILTABLE CONVERTER ARRANGEMENT

Bernhard Enkner; Rupert Berger; Manfred Eysn, all of Linz; Hermann Haslehner, Alkoven; Helmut Smejkal, Linz, and Michael Sattler, Ansfelden, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

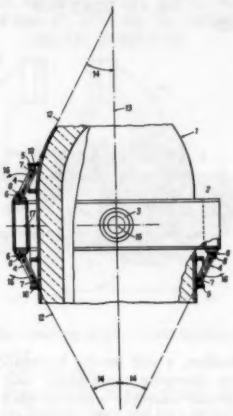
Filed Nov. 5, 1979, Ser. No. 91,268

Claims priority, application Austria, Nov. 27, 1978, 8440/78

Int. Cl.³ C21C *5/50*

U.S. Cl. 266—246 **10 Claims**

1. In a tiltable converter arrangement of the type including a converter vessel, a carrying ring surrounding said converter vessel at a distance and having two diametrically oppositely arranged carrying trunnions, and a plurality of brackets articulately mounted on both said converter vessel and said carrying ring, the improvement which comprises three brackets for articulately mounting said converter vessel in said carrying ring, each of said three brackets being inclined towards the longitudinal axis of said converter vessel and having joints



mounted on said converter vessel and further joints mounted on said carrying ring, and wherein the longitudinal axes of said three brackets lie in a plane laid through the longitudinal axis of said converter vessel and at a right angle relative to the axis of said carrying trunnions, and said three brackets are pivotable in a plane formed by the longitudinal or central axes of said three brackets and the longitudinal axis of said converter vessel.

4,281,824

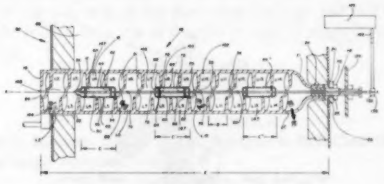
HEAT TREATING APPARATUS

Beresford N. Clarke, and Wilfred G. Shedd, both of Fort Wayne, Ind., assignors to Metals, Inc., Fort Wayne, Ind.

Filed Oct. 27, 1978, Ser. No. 955,344

Int. Cl.³ C21D *1/06*

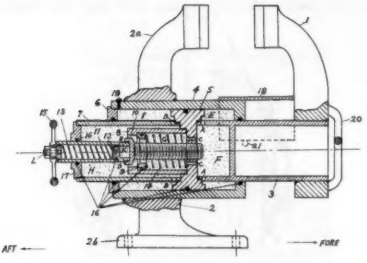
U.S. Cl. 266—251 **21 Claims**



1. An apparatus for metallurgically heat treating workpieces comprising a rotatable retort having an elongated treating chamber with an entrance and an exit, a workpiece conveyor secured within said treating chamber whereby said workpieces are moved along said treating chamber from said entrance to said exit upon the rotation of said retort, a plurality of partitions within said treating chamber, said partitions cooperating with said conveyor and said treating chamber to divide said treating chamber into a plurality of distinct atmospherically isolated chambers and to allow for the movement of said workpieces into and out of said chambers, and a reactive gas distributor within said treating chamber, said gas distributor being

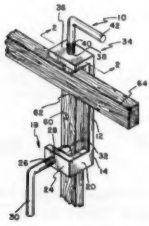
operatively adapted to be connected to a reactive gas source and having gas outlets in selected ones of said chambers.

4,281,825
MANUAL HYDRAULIC VISE
Nei-Ho Chiang, Kaohsiung, Taiwan, assignor to Yin-Lung Yang, Kaohsiung, Taiwan, a part interest
Filed Nov. 27, 1978, Ser. No. 965,398
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—29 **3 Claims**



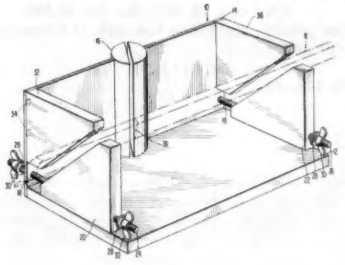
1. In combination, a vise having hydraulically transacting mechanisms for clamping work-piece, said vise comprises particularly a center assembly which is filled with an oil medium and within the body of the vise, said center assembly consists of essentially a working piston, a cylinder fixedly mounted in the body of the stationary jaw of the vise, a movable rod integrally connected to the movable jaw of the vise, a running cylinder including an inner liner with a boost piston and a control valve with a compensating piston, said running cylinder together with its components being threaded to the back face of said working piston while said movable rod is fastened to the front face of the working piston, several holes are drilled in (drilled at proper location of) each said parts in the assembly which serves as passages for cyclic flow of the oil medium.

4,281,826
STILE AND RAIL CLAMP
Royce M. Calvert, 1207 Alturas, Wichita, Kans. 67216
Filed Dec. 14, 1979, Ser. No. 103,704
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—41 **6 Claims**



1. A stile clamp comprising a base having a horizontal and planar surface adapted to receive thereagainst workpieces to be joined, a manually operable holding means carried by the base for releasably holding a workpiece against said planar surface, said holding means including a holding foot spaced above and mounted for vertical movement perpendicular to the planar surface, said holding foot having a planar lower surface adapted to bear against a workpiece, and a clamp means carried by the base for urging a workpiece along the planar surface of the base toward a position on the latter directly below said holding foot, said clamp means including a clamping foot disposed above and mounted for movement parallel to the planar surface of the base along a linear path directed toward a position directly below the holding foot, with said clamping foot having a vertical planar surface normal to said path and facing toward the holding foot, whereby the clamping foot is adapted, with respect to a pair of wrokpieces that may be received against the planar surface of the base, to clamp one of such workpieces against the other which the holding foot is adapted to hold against the base, said holding means including an upstanding member having a vertical planar surface that extends above and faces toward the planar surface of the base in an arrangement such that such surfaces are mutually perpendicular, said planar surface facing and being parallel to the linear path of the clamping foot, whereby a workpiece of rectangular parallelepiped configuration can be oriented prior to the holding thereof by use of the mutually perpendicular surfaces so that a dimension thereof is normal to said linear path of the clamping foot.

4,281,827
MITER BOXES
Gary W. Horwath, 9900 Georgia Ave., Apt. #702, Silver Spring, Md. 20902
Filed Oct. 29, 1979, Ser. No. 88,912
Int. Cl.³ B25B *1/02, 5/10*
U.S. Cl. 269—189 **8 Claims**



8. A miter box for holding a longitudinal workpiece to be cut by a cutting means at a first non-right angle measured in a plane parallel to the longitudinal axis of said workpiece and at a second non-right angle measured in plane perpendicular to said longitudinal axis of said workpiece comprising

a base,

a cutting means guide mounted on said base for guiding said cutting means to cut said workpiece at said first angle,

a first wedge means mounted on said base having a standard perpendicular to said base and a lower surface hinged to said standard, a first plate extending from said standard toward said hinged lower surface having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge, a second plate extending from said lower surface toward said standard having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge of said first wedge means, so that said slots of said first and second plates substantially overlap, a bolt passing through said slot and a nut means on said bolt for tightening said first and second plate together, whereby said hinged lower surface may be secured at said second angle to said standard,

a second wedge means mounted on said base and having a first surface parallel to said base, a second surface hinged to said first surface, a first plate extending from said first surface toward said second surface having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge of said second wedge means, a second

plate extending from said second surface toward said first surface having an arcuate slot having an arc of radius equal to the distance between said slot and said hinge, so that said slots of said first and second plates substantially overlap, a bolt passing through said slots and a nut means on said bolt for tightening said first and second plates together, whereby said hinged second surface may be secured at 90 degrees minus said second angle to said first surface, so that said workpiece may be clamped between said lower surface of said first wedge means and said second surface of said second wedge means when said workpiece is cut.

4,281,828

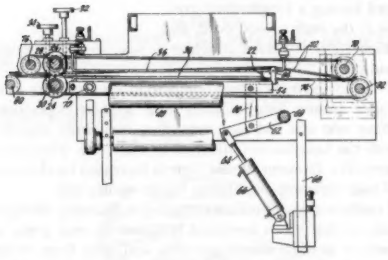
PLASTIC BAG HANDLING SYSTEM

James A. McDonald, Palos Heights, and Earl F. Stachel, Westmont, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 891,829, Mar. 30, 1978, abandoned. This application Nov. 15, 1979, Ser. No. 94,422

Int. Cl.³ B65H *45/18*

U.S. Cl. 493—12 **6 Claims**



1. A system for handling the transfer of plastic bags from a first folding station, where each plastic bag is folded at least once about a fixed axis, to a second folding station where each bag is folded about a second axis transverse to said first axis; comprising:

means for feeding in succession each bag discharged from said first folding station along a predetermined path in the direction of said second folding station;

means for forming predetermined corrugations in each bag being discharged from said first folding station;

guide means for maintaining said predetermined corrugations during movement of each bag;

means disposed along said path for blocking each bag comprising a substantially upright fence aligned in a direction transverse to said path;

an adjustable frame for supporting said fence;

control means for monitoring the registration of each bag with respect to said path at a location upstream of said second folding station and means connected to said frame for raising and lowering said frame in response to said control means; said control means and said frame raising and lowering means comprising a plurality of photoelectric cells disposed relative to said path in a predetermined arrangement and circuit means responsive to a first predetermined state of energization of said photoelectric cells for maintaining said adjustable frame activated in a raised position when each bag is properly registered and for lowering said frame in response to a second predetermined state of energization of said photoelectric cells when a bag is improperly registered; and

means responsive to said control means for diverting each improperly registered bag from said path, comprising: a multiplicity of flexible string belts arranged in substantially parallel rows on opposite sides of said path for engaging a bag in response to said control means, with each belt forming a closed loop for endless rotation; means for continuously driving each string belt; and pulley means connected to said frame for deflecting said flexible string belts from the bag engaged position when said frame is in the raised position and for releasing said belts when said frame is lowered.

4,281,829

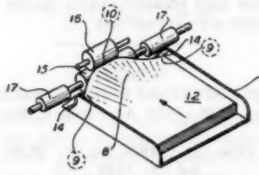
METHOD AND APPARATUS FOR EJECTING SINGLE SHEETS FROM A STACK OF SHEETS IN A TRAY

Wilbur E. Thomas, 165 Hillcrest Dr., Wayne, N.J. 07470

Filed Dec. 27, 1979, Ser. No. 107,549

Int. Cl.³ B65H *3/30*

U.S. Cl. 271—10 **4 Claims**



1. A method for ejecting single sheets from a stack of sheets in a tray comprising,

(a) stacking sheets in a tray,

(b) providing front barriers on the opposite sides of the tray,

(c) disposing the barriers over the tray acutely to the plane defined by the tray,

(d) pushing an ejector foot over the top sheet of the stack of sheets in the tray to move the sheet toward the acute barrier,

(e) blocking the leading edge of the top sheet at the side thereof with the acute barrier,

(f) buckling the portion of the sheet behind the leading edge to billow upwardly, to break the vacuum interface between the top sheet and the underlying sheet, releasing the one from the other,

(g) continuing to push on the top sheet, while the edges are engaged with the barrier, to extend the central portion of the top sheet at its leading edge, so that it advances beyond the corners of the sheet blocked by the acute barrier,

(h) driving a pair of rollers positioned to seize the middle of the leading edge of the sheet in their nip,

(i) pulling the middle of the leading edge of the sheet by the rotating rollers, to draw the corners of the leading edge of the sheet from entrapment behind the barriers,

(j) continuing to push the sheet from the tray, and pull it by the rollers, from out of the tray to eject it singly from the tray.

4,281,830

LOG ROLL ARTICLE

Erwin G. Rehbein, Waupaca, Wis., assignor to Mill-Craft Housing Corp., Waupaca, Wis.

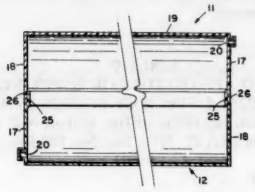
Filed May 12, 1980, Ser. No. 149,279

Int. Cl.³ A63B *23/06*

U.S. Cl. 272—1 E **8 Claims**

1. A log roll article of manufacture comprising; two substantially identical longitudinal cylindrical half sections having an ouside half cylinder hollow shell and semicircular bulkheads at the ends of the shell and one of the bulkheads has a closable port passing therethrough at a location near the line of meeting between the bulkhead and the shell and one longitudinal edge of the shell has an offset lip and one bulkhead has a similar offset lip and the offset lips are configured so that when two such cylindrical half sections are placed together so that there is a bulkhead having a port at each end of the assembled cylindrical half sections the offset lips fit closely inside their oppo-

site member which is not offset and the offset members are fixedly joined to their opposite members so as to form a sub-



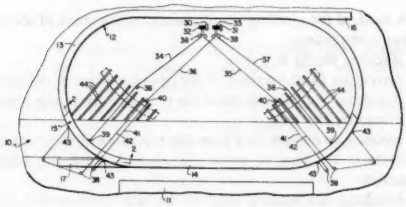
stantially water tight hollow cylinder having diametrically opposed closable ports at each end.

4,281,831

PORTABLE SECTIONS FOR DOG RACE TRACK

James W. Bird, 3230 - Fifth Ave., Suite C, San Diego, Calif. 92103

Filed Apr. 9, 1979, Ser. No. 28,282
Int. Cl.³ A63K *1/02*
U.S. Cl. 272—5 **4 Claims**



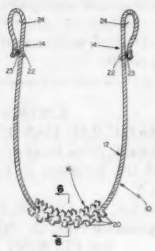
1. Apparatus for use as a race track comprising at least one fixed section having a pair of ends in spaced relationship with one another, said fixed section including a first racing surface thereon, at least one portable section having opposite ends and top and bottom surfaces, said top surface of said portable section including a second racing surface which is normally substantially aligned with said first racing surface when said fixed and portable sections are in an aligned position in end-to-end relationship, power means for moving said portable section selectively between said aligned position and a second position remote from said fixed section, a reinforced ledge means at each end of said fixed section, positioning and stop means located adjacent each end of said fixed section and extending outwardly substantially toward one another, said positioning and stop means having a generally planar bearing plate and an angularly disposed abutment means which is disposed generally diagonally across said bearing plate and at an angle to the path of movement of said portable section, skid means carried by each end of said portable section in a position to slidingly engage said abutment means as said portable section is moved toward said aligned position with said ends of said fixed section so that said portable section will be longitudinally aligned relative to said fixed section and a portion of said bottom surface of said portable section will be in engagement with each of said ledge means when each of said skid means of said portable section is in engagement with the adjacent abutment means, and means to lock each of said skid means to said abutment means when said skid means initially engages said abutment means so that when only one of said skid means initially engages one of said abutment means said portable section is moved lengthwise as said one skid means is slidably guided along said abutment means until the other skid means engages the other abutment means at which time the ends of the portable section are in alignment with the ends of said fixed section and locked thereto.

4,281,832

JUMP ROPE

Ripley Quinby, Jr., Box 176, Burlington, Vt. 05401

Continuation of Ser. No. 973,460, Dec. 26, 1978, abandoned.
This application Mar. 18, 1980, Ser. No. 131,509
Int. Cl.³ A63B *5/20*
U.S. Cl. 272—75 **3 Claims**



1. A jump rope comprising:
a cord having a longitudinal axis,
grips at the ends of said cord, and
cushion element means attached to said cord intermediate said grips,
said cushion element means comprising a multiplicity of soft finger means longitudinally and angularly positioned about said axis and each extending outwardly therefrom with the base thereof attached to said cord, whereby the operative diameter of said rope is increased by the length of said outwardly extending finger means, and
said cushion element means extending sufficiently along said axis, so that when said cord is turned by said grips, said cushion element means prevents said cord from striking the ground, thereby decreasing the noise that would otherwise occur,
wherein said cord comprises at least three strands, and said cushion element means comprises at least two elongated serrated pads with the direction of elongation extending along the axis of the cord and with each pad positioned in a respective interstice between said strands and entwined therewith and with said soft finger means being formed by the serrations of said serrated pads.

4,281,833

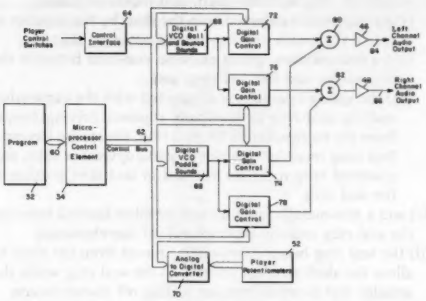
AUDIO RACQUET BALL

Michael E. Sandler, and Richard L. Aiani, both of Canoga Park, Calif., assignors to Sound Games, Inc., Canoga Park, Calif.

Filed Mar. 20, 1978, Ser. No. 890,659
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—85 G **19 Claims**

14. An aural paddle ball game operated under the control of a microprocessor wherein said microprocessor comprises:
means for defining physical boundaries in terms of sound analogs;
means for defining game elements in terms of sound analogs; and
means for defining motion of said game elements in terms of sound analogs;
means to select game modes in terms of sound analogs; and
wherein said means for defining game elements comprises:

means for defining a game ball to be manipulated within said physical boundaries; and



means defining at least one game paddle with which to effect manipulation of said game ball.

4,281,834

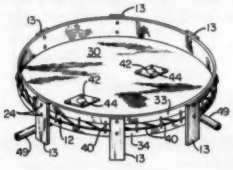
GOLF CHIPPING AND PITCHING DEVICE

Reuben Chavez, 1721 Huger, Cheyenne, Wyo. 82001

Filed Aug. 3, 1979, Ser. No. 63,386

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—182 R **9 Claims**



6. A golf practice device comprising:

an open frame member having an outer peripheral, generally circular support rim provided with upper and lower edges, and means to support said rim in an elevated, substantially horizontal position above the ground, and

a target member defined by a panel composed of a fabric or fabric-like material dimensioned to have an outer peripheral edge which will fit within said rim, and outer peripheral connecting means having a pair of generally circular flap members connected together along said outer peripheral edge of said panel and extending away from said panel around opposite upper and lower edges of said rim, said connecting means being adjustably secured together outwardly of said rim to stretch said panel across said rim under predetermined tension.

4,281,835

ARITHMETIC CARD GAME METHOD

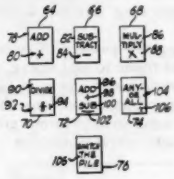
Nat Seiden, 15-5 Civic Center, E. Brunswick, N.J. 08816

Filed Aug. 3, 1979, Ser. No. 63,604

Int. Cl.³ A63F *1/00*

U.S. Cl. 273—299 **9 Claims**

1. A method of playing an educational card game comprising the step of concealing from the view of at least two players the numerical indicia carried by a first plurality of playing cards, the step of stacking said first plurality of cards, into a pile, the step of dispensing from said pile four cards of said first plurality of cards to each of said at least two players wherein said indicia of said first plurality of cards so dispensed is in view of each of said at least two players, the step of dispensing eight of cards of said first plurality of cards onto a playing surface wherein said indicia carried by said first plurality of cards are in view of said at least two players, the step of randomly selecting one of the cards of a second plurality of playing cards wherein at least some of said second plurality of cards carry indicia, said indicia carried by said second plurality of cards indicating an arithmetical process, the step of one of said at least two players removing at least one card from said eight cards and removing at least one card from said four cards



and arithmetically utilizing only said arithmetical process denoted by said indicia carried by said second plurality of cards with said numerical indicia disposed on said at least one of said eight cards and placing said at least one card from said eight cards and said at least one card from said four cards into another pile adjacent said player, said arithmetical process comprises the steps of addition, subtraction, multiplication, and division.

4,281,836

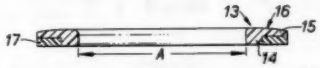
DARTBOARD SAFETY SURROUND

Ronald M. F. Black, 63 Grassendale Ave., North Prospect, Plymouth, Devon, England

Filed Feb. 5, 1980, Ser. No. 118,777

Int. Cl.³ F41J *3/00*

U.S. Cl. 273—408 **11 Claims**



1. A dartboard safety surround comprising: an annular element of solid resilient material having a radial front face with a radial dimension greater than the thickness of said element and a radial rear face defining an annular recess, and a filler which occupies said recess.

4,281,837

WATER TIGHT SEAL STRUCTURE FOR CAMERA

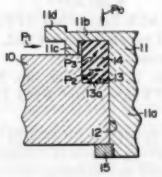
Akihiko Hashimoto, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,300

Claims priority, application Japan, Oct. 24, 1978, 53/129986

Int. Cl.³ F16J *15/34, 15/46;* **G03B** *17/08*

U.S. Cl. 277—12 **23 Claims**



1. A water tight seal structure comprising:

a frame of a device to be sealed, said frame having an opening in it for tightly accommodating a movable operating member of said device, said opening having an upper end;

a step formed in said upper end of said opening;

a sleeve made of a flexible water-impermeable material disposed on said step, said sleeve having at least one surface abutting and adhesively coupled to said step in a water tight manner such that water cannot pass between said sleeve and said step into said frame; said sleeve having an inner peripheral surface tightly but movably abutting said movable operating member accommodated in said opening; and

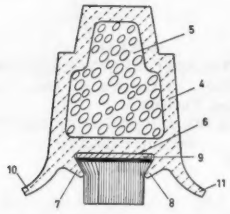
means for directing the passage of water under pressure from outside said frame to said sleeve, said means directing said water against said sleeve in such a manner that said sleeve is biased against said movable member by the pressure of said water so as to form a greater seal between said sleeve and said movable member.

4,281,838

SEAL

Stig Persson, Katrineholm, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed Sep. 4, 1979, Ser. No. 72,184
Claims priority, application Sweden, Oct. 5, 1978, 7810426
Int. Cl.³ F16J *15/44*
U.S. Cl. 277—53 **2 Claims**



1. A seal for a space between two surfaces which are movable relative to each other comprising a seal body made of an integrated foamed plastic having a homogeneous surface layer and a porous central portion material adapted to be secured to one of the surfaces, means defining a groove in the seal body confronting the other surface and formed by a pair of spaced wall portions which converge inwardly toward said other surface so that the base of the groove is wider than the groove at the outer terminal edges of the wall portions, a sealing lip projecting angularly outwardly to one side of said groove, said sealing lip forming an integral part of said seal body and engagable with said other surface a flexible strip seated in said groove and having a face confronting the other surface coated with a fiber flock projecting beyond the terminal edges of said wall portions, said strip being of a transverse dimension greater than the spacing between the terminal ends of the wall portions so that the strip and fiber flock are self- supporting in said groove and may be easily assembled therein.

4,281,839

ROTARY FACE SEALING APPARATUS

Ivar L. Schoenmeyr, Laguna Niguel, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Apr. 16, 1979, Ser. No. 30,292
Int. Cl.³ F16N *17/04;* **F16J** *15/34*
U.S. Cl. 277—93 SD **9 Claims**

1. In rotary sealing apparatus for sealing off between a relatively rotating shaft having an axis of rotation and mounting an impeller, and a relatively non-rotating wall through which the shaft extends, there being an annular seat on the wall, the combination comprising

(a) a non-metallic seal ring extending about the shaft and engaging the seat to seal off between the seat and ring, the ring having a skirt portion,

(b) means located between the impeller and the seal ring to rotate the ring with the shaft, said means including

(x_1) a cupwasher clamped onto the shaft by the impeller to rotate therewith, the cupwasher having a skirt,

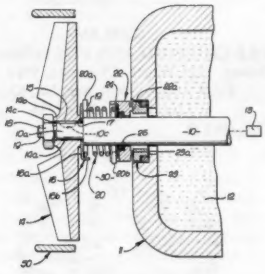
(x_2) a compression spring endwise confined between the cupwasher and the seal ring, and

(x_3) the spring operatively connected with the cupwasher and the seal ring to positively transmit driving torque from the cupwasher to the seal ring, the spring having a first tang received in a slot in said cupwasher skirt, and a second tang received in a slot in said skirt portion of the seal ring,

(c) and a non-metallic annular seal member located between the seal ring and the shaft to seal off therebetween,

(d) the seal ring being everywhere spaced from the shaft to allow the shaft to pivot relative to the seal ring while the annular seal member remains sealing off therebetween,

(e) and a seat ring defining said seat, the seat ring carried by said wall, the seat ring defining an annular notch, and an



O-ring in said notch and sealing off between the seat ring and said wall,

(f) the cupwasher extending between the impeller and a shoulder defined by the shaft to be clamped therebetween whereby positive drive is always transmitted from the impeller to the seal ring while the impeller holds the spring axially compressed to urge the seal ring against the seat,

(g) the wall having a bore through which the shaft extends, and the seat ring having a bore, the diameter of the wall bore being smaller than the bore diameter of the seat ring, the wall bore being at the side of the seat ring opposite the seal ring,

(h) and two radially extending slots defined by said wall and intersecting said wall bore which defines said diameter smaller than the diameter of said seat ring bore, whereby two elongated tools are receivable through said slots to push the seat ring free of said wall,

(i) the wall defined by a housing containing fluid lubricant which communicates with said seat ring bore and said slots.

4,281,840

HIGH TEMPERATURE PACKER ELEMENT FOR WELL BORES

Allen E. Harris, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

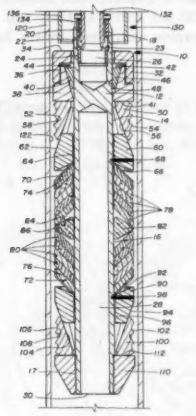
Filed Apr. 28, 1980, Ser. No. 144,791
Int. Cl.³ E21B *33/129*
U.S. Cl. 277—117 **20 Claims**

1. In a pack-off device of the type having a mandrel and means to longitudinally compress a packer element disposed about said mandrel, a packer element comprising:

a center packer ring having two oblique side faces;

a first plurality of frusto-conical packer rings having substantially parallel oblique side faces and arranged adjacent said center packer ring;

a second plurality of frusto-conical packer rings having substantially parallel oblique side faces and arranged adjacent said center packer ring;



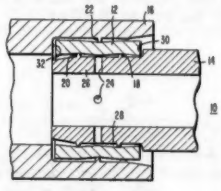
said oblique side faces of said first and second plurality of frusto-conical packer rings having an angle of radial inclination greater than the angle of radial inclination of said center packer ring side faces.

4,281,841

O-RING SEALING ARRANGEMENTS FOR ULTRA-HIGH VACUUM SYSTEMS

Chang-Kyo Kim, Knoxville, Tenn., and Robert Flaherty, Mt. Lebanon, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 30, 1978, Ser. No. 891,797
Int. Cl.[2] F16J *15/08*; F16L *25/00*
U.S. Cl. 277—236 **7 Claims**



1. An O-ring sealing arrangement for an ultra-high vacuum system comprising:

a. a first metallic tube having an internally protruding sealing ring;

b. a second metallic tube concentrically disposed within and spaced from said first tube, said second tube having two externally protruding sealing rings positioned laterally on opposite sides of said internal sealing ring and an opening disposed through the wall of said second tube positioned laterally between said external sealing rings; and

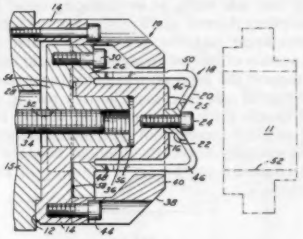
c. an O-ring concentrically disposed between said first and second tubes extending longitudinally beyond each of said external sealing rings, said O-ring being made of a heat-recoverable metal.

4,281,842

INNER DIAMETER CHUCK

Daniel P. Martin, 24068 Meadowbridge, Mount Clemens, Mich. 48043

Filed Mar. 21, 1980, Ser. No. 132,399
Int. Cl.[3] B23B *31/40*
U.S. Cl. 279—2 R **6 Claims**



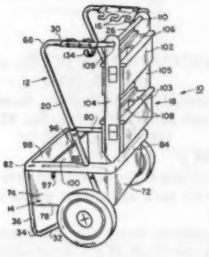
1. A chuck for holding a workpiece with an interior recess having an interior diameter comprising a body on which is mounted a radially flexible cup shaped workpiece holder having a concave face interconnected by a side portion to and a lip, the interior of the face rigidly joined to the body; means for connecting the lip to actuator means, the actuator means movable axially with respect to the holder whereby the lip is moved relative to said face interior causing a radial movement of said side portion; an exterior of said side portion of the cup engageable in the recess of the workpiece so to rigidly join the holder to the workpiece, the holder at said side portion having an outer diameter greater than the inner diameter of the workpiece recess when in an unstressed condition with no workpiece present and where movement of the actuator means axially towards said face causes the outer diameter at said side portion to decrease until less than the inner diameter of the workpiece recess.

4,281,843

TOOL CARRIER

Frank Johnson, Cambridge; Donald Gordon, Rockwood, both of Canada, and George Schick, Easton, Conn., assignors to Slater Steel Industries, Limited, Ontario, Canada

Filed Jan. 9, 1980, Ser. No. 110,768
Int. Cl.[3] B62B *1/02*
U.S. Cl. 280—47.26 **4 Claims**



1. A tool carrier comprising an essentially unitary tubular frame, a first tool receptacle, tool handle gripping means, and a second tool receptacle; said frame comprising a pair of identical opposed substantially reverse Z-shaped side members, each side member comprising an upper horizontal portion, an elongated intermediate portion extending downwardly and rearwardly, a lower portion extending downwardly and forwardly, and a vertical upwardly extending front leg, a front

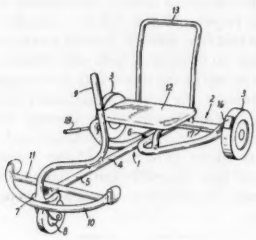
transverse member joining the upper ends of said front legs, and a transverse handle joining the rear ends of said upper horizontal portions; a transverse axle extending through the rear end portion of said lower portions; a wheel at each end of said axle, said wheels, lower portions, and legs being so dimensioned that the portion of said frame joining said lower portions and said legs forms a ground engaging member; said first tool receptacle comprising an upwardly open container having a bottom, four side walls, an overhanging upper lip about the upper periphery thereof, and a partition in the forward portion of said receptacle, said front transverse member engaging the forward portion of said overhanging lip of said first tool receptacle to support the front portion of said receptacle, the rearward portion of said receptacle bottom resting on said axle; said tool handle gripping means being affixed to said upper portions; and said second tool receptacle comprising support means substantially vertically disposed between said handle and said container and having a plurality of tool-receiving pockets thereon.

4,281,844

STEERABLE CASTORED VEHICLE

Thomas R. Jackman, London, and Trevor J. Stonebanks, Dartford, both of England, assignors to Shendale Ltd.

Filed Nov. 9, 1978, Ser. No. 958,995
Int. Cl.³ B62D *1/18*
U.S. Cl. 280—87.01 **19 Claims**



1. A vehicle comprising a support surface, a plurality of carriers on which said support surface is mounted, a castor like structure including a castoring axis and a castor element freely pivotable about said castoring axis for at least one of said carriers, steering pivot means for enabling tilting of said castoring axis relative to said support surface and steering means operable for tilting said castoring axis of said castor like structure about said steering pivot means to steer the vehicle.

4,281,845

DRIVE SYSTEM FOR BICYCLES AND OTHER APPARATUS

Lawrence G. Brown, 1629 Kuhilani St., Honolulu, Hi. 96821

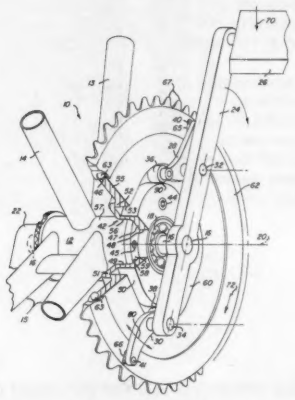
Filed Jul. 5, 1979, Ser. No. 55,017
Int. Cl.³ F16H *29/04*
U.S. Cl. 280—236 **34 Claims**

13. An input-output force correlated drive system for driving a driven device such as the rear wheel of a bicycle or the like comprising:

input force applying means for transmitting input force to and causing operation of the drive system;

rotatable output force transfer means operable by said input force applying means for transferring output force to the driven device; and

input-output force correlation means being continuously operatively connected to and operable by said input force applying means and being continuously operatively connected to and operating said output force transfer means for variably changing the rotational speed and circumferential location of said output force transfer means relative to said input force applying means during each revolution in accordance with predetermined input-output force correlation characteristics to be provided by the drive system, which comprises cam means mounted in juxtaposition to and operative relationship with said rotatable output force transfer means and said input force applying means for controlling the amount and location of the relative rotative displacement therebetween during each revolution of the drive system; and wherein said cam means comprises: cam track means having a continuous



cam surface extending 360° about the axis of rotation of said rotatable output force means for variably changing the rotational speed and circumferential location of said output, force transfer means relative to said input force applying means; and

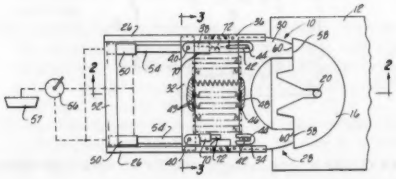
cam follower means movably mounted on said cam surface in said cam track for causing relative movement between said cam track means and said follower means during each revolution of the drive system.

4,281,846

ANTI-JACKKNIFE MECHANISM

Kenneth A. Hall, 7710 Goodall Rd., Durand, Mich. 48429

Filed Oct. 24, 1979, Ser. No. 87,871
Int. Cl.³ B62D *53/08*
U.S. Cl. 280—432 **4 Claims**



1. An anti-jackknife mechanism for a tractor-trailer combination comprising; means coupling a tractor and trailer together for articulation relative to each other about a vertical axis, a stop member fixed on said tractor having a pair of stop portions radially and symetrically spaced relative to said axis, a base member supported on said trailer, a buffer member supported on said trailer for movement relative to said base member, means limiting movement of said buffer member in one direction relative to said base member, means resiliently resisting movement of said buffer member relative to said base member in the other direction, and means to move said base member and buffer member relative to said trailer from a first

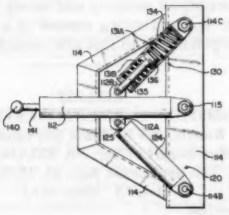
position wherein said tractor and trailer are free to pivot relative to each other about said vertical axis and a second position wherein said buffer member is engagable with said stop portions to resiliently resist articulation of said tractor and trailer relative to each other.

4,281,847

TRAILER HITCH

T. Richard Robe, Lexington, Ky., assignor to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Aug. 22, 1979, Ser. No. 68,699
Int. Cl.³ B62D *53/00*
U.S. Cl. 280—446 B **13 Claims**



1. A trailer hitch for a vehicle which permits two degrees of movement for a hitchpoint in addition to the normal rotational freedoms provided by a ball joint comprising:

a frame adapted to be attached to a vehicle;

a hitchpoint being mounted for limited lateral movement on said frame to soften the lateral motion transmitted from a towed vehicle to a towing vehicle;

dampener means operatively connected to said hitchpoint and said frame for stabilizing said lateral movement of said hitchpoint thereby reducing sway of the towed vehicle;

spring means operatively connected to said hitchpoint and said frame to bias said hitchpoint to a first predetermined position; and

said hitchpoint being mounted for rotary motion relative to said frame to rotate about a longitudinal axis of the towing vehicle thereby permitting the towing vehicle to remain upright in the event the towed vehicle is turned over.

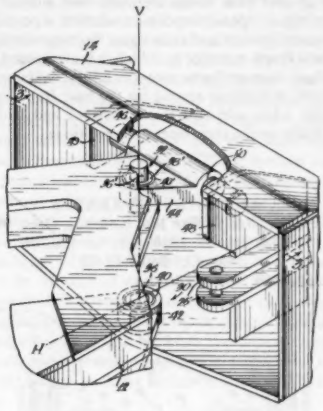
4,281,848

JOINT FOR ARTICULATED VEHICLES

Stephen A. Youngers, Clearwater, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 11, 1979, Ser. No. 83,687
Int. Cl.³ B60D *1/00*
U.S. Cl. 280—494 **4 Claims**

1. An articulated joint for an articulated vehicle having a front section and a rear section, comprising: two vertically spaced ball and socket connections interconnecting said sections for pivotal movement about a horizontal axis and a vertical axis, each ball and socket connection having a ball fixed to a pin which is carried by one of the front and rear sections, and a socket complementary to said ball which is carried by the other of said front and rear sections; and guide means, on said one section and disposed transversely relative to the longitudinal axis of said vehicle, for supporting the pin and ball of one of said ball and socket connections slidingly and rotationally about a horizontal axis, whereby relative pivotal movement of said sections in a horizontal plane about a vertical axis and in a vertical plane about a horizontal axis is accommodated by the oscillation of said ball and socket connections while said one



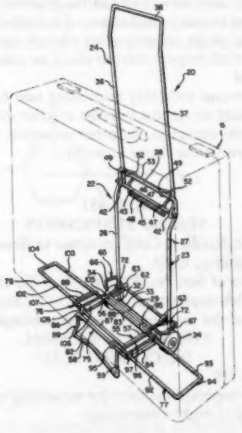
ball and socket connection shifts transversely parallel to a horizontal axis and rotates through a vertical plane.

4,281,849

PORTABLE LUGGAGE CARRIER AND METHOD OF COLLAPSING SAME

Michael D. Chandick; Robert M. Chandick, both of Orland Park, and Pasquale Ricchio, Blue Island, all of Ill., assignors to Miro Manufacturing Company, Blue Island, Ill.

Filed Aug. 8, 1979, Ser. No. 64,816
Int. Cl.³ B62B *1/20*
U.S. Cl. 280—655 **16 Claims**



1. A luggage carrier comprising an elongated, generally upright frame means having a laterally spaced, generally vertically extending side portions and laterally extending portions connecting the upper and lower ends of said side portions, a generally U-shaped base frame member having a pair of laterally spaced leg portions and a connecting portion, the ends of said leg portions being pivotally connected to the lower end of said upright frame means so that said base frame member is swingable between a generally vertical inoperative position adjacent to said upright frame means and an operative, generally horizontal position extending generally perpendicular to

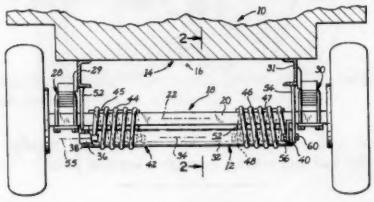
said upright frame means, and at least one auxiliary support frame pivotally connected to one of the laterally spaced leg portions of said base frame member, said auxiliary support frame having an operative position wherein a portion thereof extends laterally over and rests upon the opposite leg portion of said base frame member to which it is connected, whereby said auxiliary support frame provides additional lateral support to an article of luggage resting on the base frame member of said carrier when said base frame member and said auxiliary support frame are in their operative positions.

4,281,850

ANTI-SWAY APPARATUS

Frank G. Studer, Rte. 3, Box 186, Estacada, Oreg. 97023

Filed Feb. 11, 1980, Ser. No. 120,706
Int. Cl.³ B60G *19/02*
U.S. Cl. 280—689 **6 Claims**



1. Anti-sway apparatus in a vehicle which includes an elongate frame structure and a ground-traveling support structure having an axle which extends transversely of the longitudinal axis of the frame structure, where the frame structure is mounted on the support structure axle for substantially vertical movement toward and away therefrom, and for angular movement about its longitudinal axis with respect to the support structure axle, said apparatus comprising

a rigid beam positioned below said frame structure and extending transversely of the longitudinal axis thereof,

elongate arm means joined at one of its ends to said beam and connected at its other end to one of said structures for pivoting with respect thereto about an axis paralleling said beam, and

tensioning means yieldably tensioning said beam against the other of said structures to resist angular movement of said beam, with respect to said other structure, about the longitudinal axis of the frame structure.

4,281,851

SPRING SUSPENSION

Vernon Brandt, Reedley, Calif., assignor to Brandt Manufacturing, Inc., Reedley, Calif.

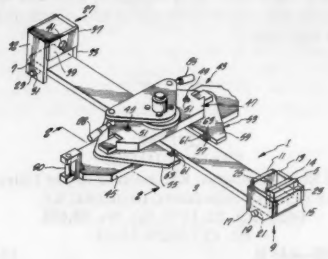
Continuation of Ser. No. 591,715, Jun. 30, 1975, Pat. No. 4,077,654. This application Nov. 17, 1977, Ser. No. 852,457
The portion of the term of this patent subsequent to Mar. 7, 1995, has been disclaimed.
Int. Cl.³ B60G *11/00*
U.S. Cl. 280—718 **1 Claim**

1. A spring suspension system for mounting to an axle assembly and a vehicle body comprising:

a king pin;

a spring member;

a first bracket member adapted to receive and secure a first end portion of said spring member, a second bracket member adapted to receive and secure a second and opposite end portion of said spring, said first bracket being pivotally mounted to said vehicle body, both said first and second bracket members being mounted on a longitudinal axis with respect to said vehicle body, said first bracket member being further defined as being positioned to secured said first end portion of said spring member at an elevation which differs from the elevation of said axle assembly, thereby inclining said axle assembly and said king pin housed therein to an angle between 0.5° and 4° from the vertical; and



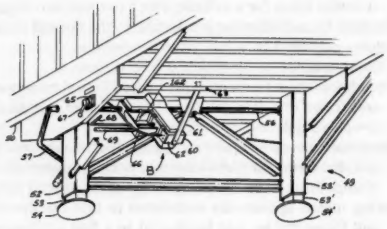
clamping means for securing said spring to said axle assembly such that said spring extends in a direction substantially perpendicular to said axle assembly.

4,281,852

MOTION CONVERTING SYSTEM

Raymond L. Konkle, 409 N. Tenth St., Clinton, Iowa 52732

Continuation-in-part of Ser. No. 883,434, Sep. 15, 1977, abandoned. This application Apr. 25, 1979, Ser. No. 33,327
Int. Cl.³ B60S *9/12*
U.S. Cl. 280—766 **9 Claims**

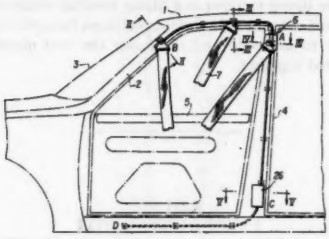


2. A motion transmission system for operating a landing gear system of a truck trailer, said landing gear system having separate landing gear legs interconnected by a single shaft and each landing gear leg being retractible and extensible in response to rotation of said shaft in one direction or the other, said system comprising sleeve means for receiving said shaft, means for coupling said sleeve means to said shaft, a pneumatic cylinder, an actuator rod extending from said cylinder axially normal to said sleeve means and reciprocal toward and away from said sleeve means, first and second lever arms having proximal ends swingable about said sleeve means, first and second links respectively interconnecting distal ends of said first and second lever arms with said rod, a toothed wheel carried by said sleeve means, and selectively reversible pawl means carried by each of said lever arms for engaging teeth of said toothed wheel to cause rotation of said sleeve means for rotating said shaft in a selected continuous direction with each movement of said rod, an elongated housing for enclosing said sleeve means, said pneumatic cylinder, actuator rod, lever arms, links, pawl means and toothed wheel, said housing being apertured proximate one end thereof for receiving said shaft intact for supporting said system at one end of said housing with said shaft extending transversely from opposite sides of said housing, and a brace at the other end of said housing for securement to floor structure of said trailer for suspending the other end of said housing from said floor structure, said means for coupling said sleeve means to said shaft comprising transmission gears for selectively causing said shaft to rotate at greater angular velocity than said sleeve means.

4,281,853
SEAT BELT RESTRAINING APPARATUS

Bernard LeVeux, Vauhallan, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Oct. 2, 1979, Ser. No. 81,162
Claims priority, application France, Oct. 25, 1978, 78 30294
Int. Cl.³ B60R *21/40*
U.S. Cl. 280—804 **5 Claims**



1. A seat belt restraining apparatus for an automotive vehicle having a door, said apparatus comprising:

a door frame constituted by a reinforcing bar which defines a windshield post, a longitudinal roof reinforcing post and a lateral roof post, said reinforcing bar including inner and outer sheet means connected by longitudinal lips;

at least one upper lateral anchorage for one end of said belt and movably fixed in said door frame;

a lower anchorage for the other end of said belt, said belt extending laterally with respect to said door;

a guide support for said upper lateral anchorage, said guide support supported by said inner sheet means of said reinforcing bar;

an anchorage block element affixed to said at least one upper lateral anchorage and movable in said guide support;

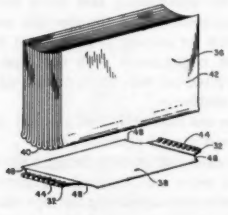
a flexible, motor driven, rack in said guide support, said anchorage block element being fixed to said rack, said guide support including a tube within which said rack slides, said guide support having longitudinally spaced fastening elements, said fastening elements being engaged in openings in said guide support;

whereby access to a seat is automatically freed when said door is opened and said belt automatically closes over the body of the seat occupant when said door is closed.

4,281,854
INTEGRATED BOOK LINING

Peter P. Savich, Longmeadow, Mass., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.

Continuation of Ser. No. 882,912, Mar. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 785,965, Apr. 8, 1977, abandoned. This application Dec. 14, 1979, Ser. No. 103,863
Int. Cl.³ B42D *3/00;* **B42C** *11/00*
U.S. Cl. 281—21 R **11 Claims**



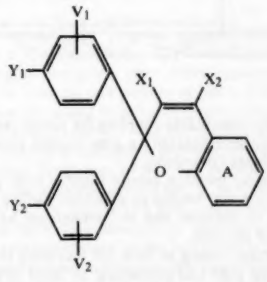
1. An integrated book lining to be applied to a spine and end sheets of a book for securing book pages prior to casing-in the book with a cover, the book lining being an integral one-piece unit formed from a single sheet of substantially flat strip stock and comprising a generally rectangular sheet having opposite longitudinal ends folded toward one another with inner surfaces at each respective longitudinal end of the sheet being in confronting bonded relation to one another, the sheet having a folded length between its opposite longitudinal ends substantially equal to a length of a book spine to which the lining is to be applied, the sheet having a width between opposed side edges thereof which width is less than its folded length, the sheet having a longitudinally extending intermediate portion of a predetermined uninterrupted width substantially equal to the width of a book spine to which the lining is to be applied, and opposed side flaps respectively extending in opposite directions laterally beyond said intermediate portion and the opposed side edges of the sheet to be applied to end sheets of a book, and the corners of each of the side flaps of the sheet being relieved with corner cutouts defining each longitudinal end of said intermediate portion of the sheet of said predetermined uninterrupted width between the corner cutouts, said longitudinal ends of said intermediate portion of the sheet respectively having an outer surface printed with a simulated headband.

4,281,855
PRESSURE-SENSITIVE OR HEAT-SENSITIVE RECORDING MATERIAL AND NOVEL 2,2-DIARYLCHROMENO COMPOUNDS USED THEREIN

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 873,582, Jan. 30, 1978, Pat. No. 4,187,233. This application Jun. 25, 1979, Ser. No. 51,556
Claims priority, application Switzerland, Feb. 4, 1977, 1379/77
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 282—27.5 **19 Claims**

1. A pressure- or heat-sensitive recording material comprising a support containing or coated with at least one color-forming agent which is a 2,2-diarylchromeno compound of the formula



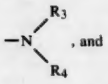
wherein

V_1 and V_2 each represent hydrogen, chlorine, lower alkyl or lower alkoxy,

Y_1 and Y_2 each represent hydrogen, —O—R_1 or

X_1 and X_2, each independently of the other, represent hydrogen, alkyl of up to 12 carbon atoms which is unsubstituted or represent benzyl, phenyl, or benzyl or phenyl

which is substituted by chlorine, nitro, lower alkyl, lower alkoxy or the amino group



the ring A is unsubstituted or substituted by halogen, nitro, lower alkyl, —O—R_5 or

or contains a fused benzene ring, and

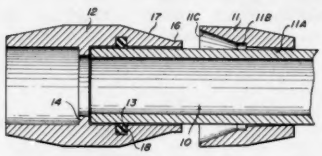
R_1, R_2, R_3, R_4 R_5 and R_6, each independently of the other, represent alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by cyano or lower alkoxy, or represents cycloalkyl, phenyl, benzyl, or phenyl or benzyl which is substituted by chlorine, nitro, lower alkyl or lower alkoxy, or each of the pairs of substituents R_1 and R_2, R_3 and R_4, R_5 and R_6, together with the nitrogen atom to which said pair is attached, forms a 5- or 6- membered heterocyclic radical.

4,281,856

WET-DRY CEMENTABLE COUPLING FOR PLASTIC PIPE

Alan L. Litman, 114 Hartwood Dr., Pittsburgh, Pa. 15208, and James P. Strode, 16 Andros Rd. - Ocean Reef, Key Largo, Fla. 33037

Filed Jul. 28, 1978, Ser. No. 928,826
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—15 **8 Claims**



1. A wet-dry cementable coupling for plastic pipe, for repair or replacement to a preexisting pipe section regardless of its wet-dry condition comprising:

a plastic sleeve member axially slidable over a preexisting pipe section and having an extended surface area closely adapted to encircle and be cementable to the outside surface of the pipe.

a plastic fitting having an inlet for receiving the end of the preexisting pipe and containing an inner dry seal means engageable with the outer surface of the pipe to form a fluid tight seal, thereby enabling the outer surface of the preexisting pipe to be dried upstream of the dry seal,

said plastic sleeve member and plastic fitting being formed to provide closely interengageable mating surfaces when in the driest area the sleeve member is axially positioned on the pipe abutting the fitting member,

one of said sleeve member and fitting member having an annular recess that is cylindrical in longitudinal cross-section for encircling the pipe and in communication with both the space between the abutting surfaces of the sleeve ad fitting, and in communication with the space between said extended surface area of the sleeve and the outer surface of the pipe,

and the other of said sleeve member and fitting member having a projection portion corresponding in shape to the annular recess in the other member and adapted to enter and closely interfit with the recess when the two members are abutted together on the pipe,

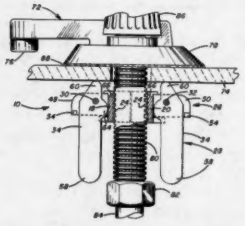
said projection and recess effectively providing a piston and cylinder action to force cement under pressure between the confronting surface areas of the sleeve member and pipe, and additionally between the closely mating surfaces of the sleeve member and fitting member when cement is applied onto the pipe surfaces between these two members prior to assembly and thereafter the two members are abutted together.

4,281,857

FAUCET CONNECTOR

Bruce Randall, 3554 Marion Ave., Finleyville, Pa. 15332

Filed Apr. 12, 1979, Ser. No. 29,566
Int. Cl.³ F16L *35/00, 37/00, 55/00*
U.S. Cl. 285—34 **10 Claims**



1. A quick release connector comprising, a nut assembly having a cylindrical body portion with an axial bore therethrough,

said body portion including a plurality of individual sections each having an external surface and an internal surface,

said internal surfaces of said individual sections forming said axial bore,

said individual sections being adapted to receive a pipe-like member extending through said axial bore,

retaining means positioned in surrounding relation with said external surface of each of said body portion sections for maintaining said body portion sections in assembled relation,

lever means pivotally connected to said retaining means for exerting a clamping force upon said body portion sections to move said body portion sections into clamping engagement with the pipe-like member,

said lever means being adapted to move between a first position for maintaining said body portion sections in locked engagement with the pipe-like member and a second position for quickly releasing said body portion sections from engagement with the pipe-like member to permit longitudinal movement of said nut assembly on the pipe-like member,

said lever means having an end portion movable between said first and second positions, and

said lever means end portion being adaptable in said first position to move into wedging engagement with the surface of a structure supporting the pipe-like member so that continued movement of said lever means is resisted and said nut assembly is urged downwardly on the pipe-like member to firmly engage said nut assembly to the pipe-like member.

4,281,858

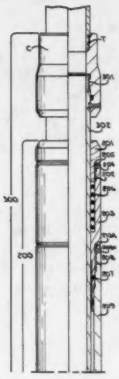
SELECTIVELY BRIDGED EXPANSION JOINT

Michael L. Bowyer, Aberdeen, Scotland, assignor to Baker International Corporation, Orange, Calif.

Filed Oct. 10, 1979, Ser. No. 83,728

Int. Cl.³ F16L *35/00*

U.S. Cl. 285—39 **7 Claims**



1. A selectively telescopable joint carryable on a tubular conduit having upper and lower conduit members extendable within a subterranean well, said joint comprising: an outer cylindrical housing; an inner cylindrical body carried interior of said outer cylindrical housing, one of said housing and said body connectable to said upper member and the other of said housing and said body being connectable to said lower member; seal means on one of said housing and said body and slidable along the other of said housing and body to prevent fluid communication therebetween during telescoping movement; engagement profiles defined on each of said housing and said body; a bridging member extendable within said joint and between said housing and said body; engaging means on said bridging member extendably and selectively secured within said profiles, whereby said housing and said body are in relative locked position; and means for urging and removing said engaging means out of said engagement profiles whereby said housing and said body may be selectively telescoped in expanding and contracting directions.

4,281,859

PIPE JOINTS

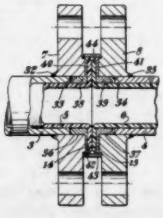
Pamela M. Davies, East Preston, England, assignor to Le Carbone (Great Britain) Limited, England

Division of Ser. No. 695,761, Jun. 14, 1976, Pat. No. 4,127,287. This application Jul. 20, 1978, Ser. No. 926,296

Claims priority, application United Kingdom, Jan. 9, 1976, 00773/76

Int. Cl.³ F16L *9/14*

U.S. Cl. 285—55 **3 Claims**



1. In a joint between two pipe sections, each pipe section being of the type including an outer metal pipe and an inner liner of rubber or synthetic resin material, wherein metal jointing flanges are provided on the adjacent ends of the pipe section, and wherein each liner extends from the interior of its associated pipe section radially outwardly to form a liner extension between portions of the respective flanges and terminating in generally annular surfaces, the joint including means for urging the flanges towards one another so that a seal is formed between the mating faces of the two liner extensions lying between the flange portions, the improvement comprising an annular metal ring between substantially planar, parallel faces of the jointing flanges and radially outwardly of the liner extensions, and first and second generally annular metal inserts, each of said inserts having a portion lying between one of said flanges and one of said liner extensions, each of said inserts further including an axially protruding peripheral lip forming sliding sealing contact with an inner surface of said annular ring such that the combination of said metal inserts and metal ring reduces leakage from the pipe joint in the event of failure of the seal between said liner extensions as a result of external fire.

4,281,860

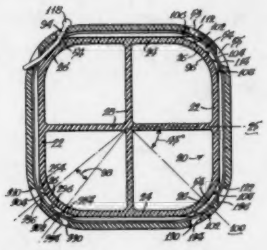
KEY COUPLED PLASTIC CONDUITS

Kenneth F. Streit, Mt. Prospect, Ill., assignor to Techplastics, Inc., West Chicago, Ill.

Filed Jul. 27, 1979, Ser. No. 61,355

Int. Cl.³ F16L *39/00*

U.S. Cl. 285—137 R **10 Claims**



1. A connection for two conduit sections each of which is formed from a plurality of integrally formed plastic enclosing walls defining an elongated, open ended passageway therein, comprising: an integral bell portion at one end of one of said two conduit sections and an integral spigot portion at one end of the second conduit section with the outer transverse dimensions of the free end of said spigot portion corresponding to the inner transverse dimensions of said bell portion whereby said two conduit sections mate together; a peripheral, outward extending lip at the free end of said spigot portion, said lip having outer transverse dimensions generally equal to the inner transverse dimensions of the bell portion to support the free end of said bell portion and to index said spigot portion to the bell portion; a first peripheral flange at the spigot portion and adjacent to—but spaced apart from—said lip, said first flange having outer transverse dimensions generally corresponding to the inner transverse dimensions of the corresponding location in said bell portion; a second peripheral flange at the spigot portion adjacent to—but spaced apart from—said first flange, second second flange having outer transverse dimensions generally corresponding to the inner transverse dimensions of the corresponding location in said bell portion of, said first flange lying between said lip and said second flange, whereby said first flange, said second flange and said lip on said first conduit section cooperate with the bell portion on said second conduit section to align both conduit sections together;

a gasket seated within the annulus defined by the adjacent

sides of said first flange and said lip, said gasket being of a dimension relative to the outer transverse dimensions of said lip and said first flange to engage the inner surface of the bell portion thereby sealing the joint between the bell portion and the spigot portion of said two conduit sections; and

means for interlocking said one conduit section relative to said second conduit section including: retention means on the exterior surfaces of said spigot portion between said first and second flanges; a plurality of paired apertures in the bell portion adapted in position to be aligned with said retention means, said paired apertures and said retention means cooperating together to define a plurality of openings with ends defined by the paired apertures in said bell portion and with a mid-section defined by the exterior surfaces of said spigot portion; and a plurality of keys snugly extending through each of said paired apertures and into said retention means thereby mechanically joining said two conduit sections, said keys being formed from a generally straight length of resilient plastic material, the longitudinal axis of said keys—when inserted into the opening defined by said paired apertures and said retention means—being deformed so as to define a curved line segment, whereby said keys present a convex aspect relative to the longitudinal axis of said conduit sections in holding said conduit sections together.

4,281,861

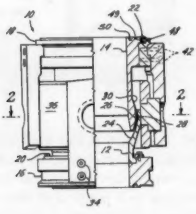
BALL JOINT

Frank P. Czerewaty, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Aug. 17, 1979, Ser. No. 67,414

Int. Cl.³ F16L *27/04*

U.S. Cl. 285—265 **7 Claims**



1. A ball joint comprising

a first tubular member having an enlarged inner diameter at one end thereof with an internal groove,

a seal ring in said internal groove,

a second tubular member having a partial external spherical surface on one end thereof,

the spherical surface of said second tubular member being positioned within said one end of said first tubular member in sealing engagement with said seal ring,

a first flange having an inner diameter sufficiently large to allow installation and removal of said second tubular member therethrough,

means connecting said first flange to the other end of said second tubular member from said spherical surface, and

means interconnecting said first tubular member and said first flange whereby relative pivoting between said tubular members is maintained about the center of said spherical surface,

said second tubular member being removable and replaceable through said first flange without disconnecting said interconnecting means when said first flange is free of connections other than said interconnecting means.

4,281,862

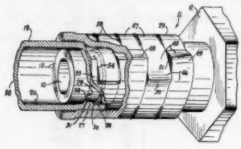
TUBING JOINT ASSEMBLY

Ralph G. Ridenour, 626 Lexington-Ontario Rd., Mansfield, Ohio 44903

Continuation-in-part of Ser. No. 887,491, Mar. 17, 1978, abandoned. This application Oct. 5, 1978, Ser. No. 948,905

Int. Cl.³ F16L *13/14*

U.S. Cl. 285—382.2 **5 Claims**



1. A tubing joint assembly, comprising in combination,

a first metal tubular part having an inner wall and an outer facing wall,

a metal tube telescoped over said first tubular part and having inner and outer facing walls,

a metal sleeve telescoped over said tube and having an inner facing wall,

a plurality of sharp annular shoulders on one of said facing walls,

and a herringbone inward compression path on two longitudinally opposite sides of the outer surface of said sleeve establishing a zig-zag compression path of a length longer than that of said sleeve and compressing inwardly said sleeve against said tube and establishing a corresponding zig-zag compression path compressing said tube against said first tubular part to establish a fluid tight seal especially at said sharp annular shoulders to physically lock together said tubular part, tube and sleeve.

4,281,863

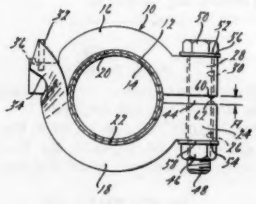
EXHAUST TUBE CLAMP

John F. Hall, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 1, 1979, Ser. No. 80,913

Int. Cl.³ F16L *13/14*

U.S. Cl. 285—382.2 **2 Claims**



1. In an exhaust system utilizing thin-walled tubing subject to extreme radial collapse when constrictive forces above a given force range are applied thereto, a self-limiting clamp for joining and sealing telescoped end of an inner and outer tube comprising; an elongated upper and lower member each having curved mid-portion for engaging the outer tube about substantially its entire periphery; each member also having a tubular portion formed along one end edge portion and with each tubular portion being in axial alignment with one another when the members are assembled loosely about the tubing; means including the second opposite end edge portions to form a hinging action between the members; the hinging means including portions of the lower member which is formed of a continuous single strip of metal, one end of which is formed in the tubular portion at the one end edge, the second end edge portion being formed by turning the strip back upon itself so

that the mid-portion of the member has a double thickness, a portion of the turned back strip extending normal to the plane of the mid-portion to form a bridge of substantial depth as compared to the thickness dimension of the metal strip, the bridge portion being formed by bending distortion of the strip so that an opening is produced beneath the bridge portion and between it and the remainder of the strip, the second end portion of the upper member being extended for projection through the opening and beneath the bridge portion for subsequent bearing engagement with the bridge portion; fastener means extending through the aligned portions for selectively drawing the member and particularly the tubular portions toward one another, the tubular portions defining facing end surfaces between the members and being configured so that a gap therebetween is formed when the members are loosely assembled about the tubing whereas operation of the fastener means draws the facing end surfaces together to cause the curved mid-portions to engage and radially distort the outer telescoped tube in a controlled manner.

4,281,864

LOCKING DEVICE FOR A TRANSPORT CONTAINER OF AN ELECTRICALLY DRIVEN, RAIL-BOUND TRANSPORT CAR WITH A CONTACT DEVICE ACTUATABLE BY A TRANSPORT CONTAINER COVER FOR MONITORING THE LOCKING STATE

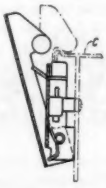
Edelbert Wiechert, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 12, 1979, Ser. No. 29,393

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2817151

Int. Cl.³ E05C *3/12*

U.S. Cl. 292—229 **12 Claims**



1. A locking device for a transport container of an electrically driven rail-bound transport car, comprising support means for operative association with a transport container which is to receive a cover in closing relation thereto, a catch carried by said support means and movable from a disengaged position to a fully engaged position, the catch is said fully engaged position being operative for securely retaining the cover in said closing relation to the transport container, a contact device secured to said support means in the vicinity of said catch for monitoring the locking state of the catch with respect to the cover and being actuatable in response to fastening of the cover in said closing relation by means of said catch, an actuation element mounted by said support means so as to be engageable with the cover as the cover is moved into said closing relation to the transport container, and being resiliently urged by a spring force toward a non-actuating condition relative to said contact device, a bearing controlling movement of the actuation element to an actuating relationship to said contact device, said bearing being movably mounted by said support means and being movable by a portion of the catch as the catch is moved toward said engaged position, toward an enabling position, said bearing when in said enabling position being disposed to enable actuation of the contact device by the actuation element, said bearing when not completely moved to said enabling position by the catch because of the catch not being fully moved to its fully engaged position, preventing actuation of the contact device even when the actuation element is deflected against the spring force by means of the cover being disposed in its closing relation to the transport container, and said actuation element being movable to actuate said contact device only when the cover is in said closing relation to the transport container and the catch has been fully moved to its fully engaged position relative to the cover.

4,281,865

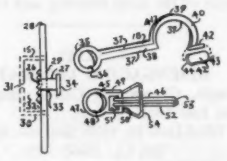
INTERIOR DOOR SECURITY

James A. Nicholson, 10600 Van Stralen Way, Rancho Cordova, Calif. 95670

Filed Nov. 16, 1979, Ser. No. 94,973

Int. Cl.³ E05C *19/18*

U.S. Cl. 292—258 **3 Claims**



1. A door knob security cinch loop comprising an elongated member which forms a loop shaped to extend over a knob and being secured at a point spaced therefrom to a connection and pivot means; an elongated hook pivotally secured to said pivot means and shaped to fit about a shank of said knob; an opposite end of said security cinch loop comprising anchor means; including a part of said elongated member, and including means shaped for securing said opposite end to a structure adjacent said door.

4,281,866

WEED PULLER AND EJECTOR

James E. Atcheson, 3203 - 26th, Lubbock, Tex. 79412

Filed Aug. 27, 1979, Ser. No. 69,836

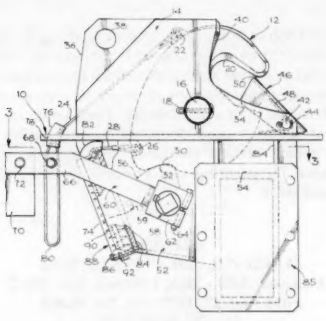
Int. Cl.³ B66F *3/00*

U.S. Cl. 294—50.5 **6 Claims**

1. In a weed puller including
a. an elongated handle having
(i) an axis,
(ii) an upper end, and
(iii) a lower end,
b. an earth trowel on the handle extending downward from the lower end,
c. said trowel being bifurcated forming a pair of tines with a slot between them,
d. the ends of the tines angled inward toward the slot to form a notch so that when the trowel is forced into the earth, a weed root is guided into the slot; wherein the improvement comprises:
e. a blade in the slot, and

f. ejecting means attached to the blade for moving the blade down the slot so as to remove a weed root in the slot,
g. the ejector means includes
h. a rod attached to the blade,
j. said rod extending upward to a hand actuator
(i) on the top thereof and
(ii) adjacent the upper end of the handle,
k. a spring between the rod and handle biasing the rod upward, and
l. a metal strap extending normal to the handle at the upper part of the strap to form a pedal,
m. the strap curving downward from the outer end of the pedal and back to the axis of the handle to form a fulcrum, and
n. the bottom of the strap forming said trowel.

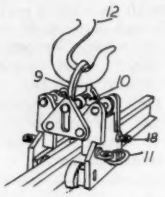
4,281,867
DISENGAGING APPARATUS
Nikolai Kariagin, Chatsworth, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.
Filed Oct. 10, 1979, Ser. No. 83,420
Int. Cl.³ B66C *1/34*
U.S. Cl. 294—83 R **17 Claims**



1. Disengaging apparatus comprising:
a releasable hook including a contact surface, a pivot axis, and a cam surface;
a housing containing means for positioning said hook for rotation about the pivot axis;
a cam mounted on a shaft pivotable about a second pivot axis between first and second positions respectively blocking and permitting rotation of the hook;
means coupled to the cam for rotating the cam about the second pivot axis upon release thereof, said means comprising counterbalance means mounted to rotate the cam toward the second position; and
hook rotating means operatively interconnected with the cam coupled means for positively pivoting the hook after rotation of the cam out of the blocking position.

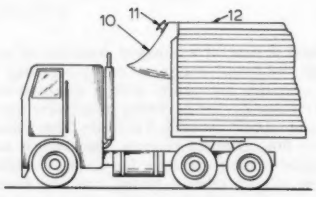
4,281,868
RAIL THREADING DEVICE
Estel L. Lovitt, Toledo, Ohio, assignor to Mitchell Equipment Corp., Toledo, Ohio
Filed Mar. 16, 1979, Ser. No. 21,183
Int. Cl.³ B66C *1/64*
U.S. Cl. 294—106 **3 Claims**

1. An improved rail threading device for use with a crane comprising two framing members both attached by pivot pins to each of two triangular connecting means,
the triangular connecting means having a vertical slot and extending through both slots a main connecting rod,
at least one positioning arm attached to each framing member and the main connecting rod, the attachment of the positioning arms to each framing member by means of a framing member frame rod,
a "U" shaped attachment ring attached to the main connecting rod,
further, on each framing member a rectangular plate mounted about a mounting stud,
each rectangular plate having thereon mounted at least two wheel means, the axis of said wheel means parallel to the



mounting stud and perpendicular to the major plane of the rectangular plate and framing member.
wherein movement of said main connecting rod within said slots results in movement of said framing members so that lifting of said main connecting rod by said "U" shaped attachment ring results in a gripping action about a rail when the rail is positioned between said rectangular plates.

4,281,869
AIR SPOILER
Joseph D. Saint, 4844 Fir St., San Diego, Calif. 92101
Filed Dec. 31, 1979, Ser. No. 108,462
Int. Cl.³ B60J *1/04*
U.S. Cl. 296—1 S **17 Claims**



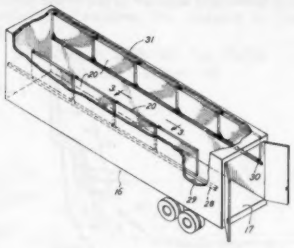
1. In combination for trailers and bob tail trucks, an air spoiler and an air foil mounted in assembly together, the air spoiler having a generally conical shape and being hollow at its annular open end, means secured with the air spoiler adjacent to its annular open end for attaching the air spoiler to a truck trailer and the like, the generally conical shape including a gently curving upper surface defined by an outer generally arcuately curved continuous lead edge and an under curved surface continuously joining the continuous curved lead edge with the open end of the air spoiler, the air foil having mounting means supporting it on said gently curving upper surface generally at its rear most upper end, the air foil having a generally arched shape which shape is arched in a direction away from said gently curving upper surface, and a gap being located between the air foil and said upper surface and with said air foil positioned for control of the air flow rearward of the combination along a top surface of a trailer body.

4,281,870

VEHICLE CONVERTIBLE DOUBLE DECK SYSTEM

Donald J. Ehrlich, Monon, Ind., and Bennett O. Blout, Berwyn, Ill., assignors to Evans Products Company, Rolling Meadows, Ill.

Filed Aug. 6, 1979, Ser. No. 63,922
Int. Cl.[3] B61D 3/02, 3/04; B65D 25/06
U.S. Cl. 296—24 R 6 Claims



1. In a vehicle freight container having a main floor and a pair of opposed vertical side walls, a deck assembly comprising a series of movable panels for providing a second floor spaced above said main floor, said panels being mounted for storage flat against said side walls, the improvement in mounting means for each panel comprising:

a universal pivot connecting one lower corner of the panel to a container side wall,

a second pivot detachably connecting the upper corner of said panel opposite said one lower corner to said container side wall, thereby providing a vertical hinge to permit rotating a free end of the panel across the container adjacent the opposite side wall thereof,

said second pivot including means for holding said upper corner in vertical alignment with said lower corner when the panel is disposed against said container side wall and to release said upper corner when the panel is disposed across the container with its free end adjacent said opposite side wall,

a pair of horizontally disposed rails secured to said opposed side walls of the container for supporting said panel in operative position at both its free and hinged ends, in parallel spaced relation to the container floor, and

means for locking said free end of the panel to said side wall when the panel is in storage position.

6. In a vehicle freight container having a floor, a pair of opposed vertical side walls and a pair of side rails secured to said side walls above the floor, a series of rectangular panels mounted longitudinally on both said side walls above said rails, and hinge means having cooperative members on each panel and on the side wall on which the panel is mounted, which hinge means permit the panels to be rotated about their horizontal and vertical axes, thereby permitting the panels to be moved from a stored position against said side wall on which the panel is mounted to an operative position spanning said side rails to provide a second floor parallel to said container floor.

4,281,871

MOTOR VEHICLE SEAT MOUNTED WITH LONGITUDINAL SLIDING MOBILITY

Heinz Grittner, Kürten, and Ralf Giese, Frechen, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 31, 1980, Ser. No. 117,168
Int. Cl.[3] B60N 1/08
U.S. Cl. 296—65 R 3 Claims

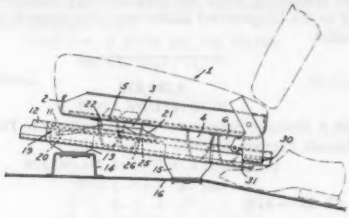
1. A motor vehicle seat mounted for longitudinal sliding mobility over a predetermined seat position adjustment range, the seat having a frame supported on a plurality of slide blocks slidable on two longitudinally extending, spaced, parallel, upright, C-shaped guide rails anchored to a vehicle floor,

each of the slide blocks being carried on a depending bracket secured to inner and outer longitudinally extending side frame members of the seat frame,

one of the C-shaped guide rails being fixed to a substantially vertical web surface of a centrally located vehicle floor assembly tunnel and the other adjacent an outer vehicle body wall,

and the seat frame being provided with a latch device engageable with latch device engageable means for the determination of the seat position,

wherein the improvement comprises:



at least two longitudinally spaced depending brackets on each seat side frame member,

the distance between the forwardmost and rearwardmost brackets secured to the outer side of the seat frame being approximately half the mutual interval between the forwardmost and rearwardmost brackets on the inner side frame member of the seat frame,

the arrangement of the depending brackets on the seat frame is, in plan, an equiangular or oblique parallelograms with its short side adjacent the other wall of the vehicle,

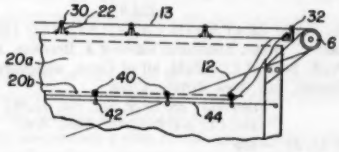
and the respective lengths of the outer and inner guide rails correspond to the distance between the forwardmost and rearwardmost slide blocks on each side frame of the seat plus the length of the seat position adjustment range.

4,281,872

TARPAULIN COVER SYSTEM FOR USE WITH A TRUCK BOX

Vito Biancale, R.R.#2, Dundas, Ontario, Canada

Filed Jan. 26, 1979, Ser. No. 6,762
Claims priority, application Canada, Jun. 28, 1978, 306406
Int. Cl.[3] B60P 7/04
U.S. Cl. 296—100 14 Claims



1. A tarpaulin cover system for use with a truck box of the type including a floor, a front wall and a pair of upright side walls each defining a generally horizontal upper edge, the cover system including a tarpaulin, and a series of support rods attached to a longitudinal medial section thereof in spaced parallel relation and arranged to extend transversely of the box in the installed condition, and a cable system adapted to be installed such that each one of a pair of horizontal reaches of the cable extends along parallel to and above a respective one of the upper edges of the box, the support rods adapted to be connected at their opposing ends to the respective horizontal reaches of the cable for support thereby, said rods save for a

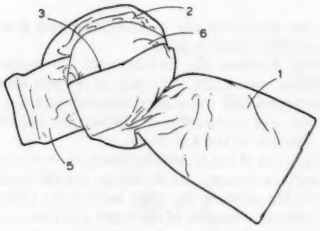
final one of the rods, adapted to be connected to said reaches of the cable for relative movement therealong, the final rod adapted to be connected to the tarpaulin and being fixed to said reaches of the cable so that movement of said reaches of cable can move the tarpaulin along the upper edges of the box, said tarpaulin having longitudinal marginal sections flanking the medial section and adapted to extend downwardly alongside the side walls of the box, a pair of tensioning wires each adapted to extend alongside an associated one of the side walls of the box, and means for connecting said marginal sections of the tarpaulin to respective ones of the tensioning wires at spaced apart intervals for movement therealong when the tarpaulin is moved alfong the upper edges of the box, and wherein the means for connecting said marginal edge portions to the tensioning wires are longitudinally staggered with respect to the longitudinal locations of the support rods on the tarpaulin.

4,281,873

FURNITURE UNIT

Judith J. Holland, Brampton, England, assignor to Tarn Textiles Limited, Preston, England

Filed Nov. 1, 1979, Ser. No. 90,324
Int. Cl.[3] A47C *13/00*
U.S. Cl. 297—118 **9 Claims**



1. A furniture unit comprising an outer inflatible fillable cover, said cover comprising a portion shaped to form a seat and backrest when filled and a separate and distinct porton shaped to form a bed when filled connected to one end of said seat portion, a passage communicating with the interior of said bed and seat portions, deformable filling material in said cover movable between said seat and bed portions, and selectively operable closure means in said passage for closing said passage to prevent movement of said filling material from one portion to the other portion.

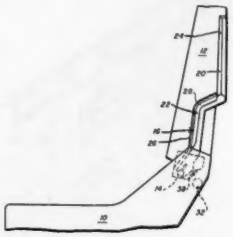
4,281,874

AIRCRAFT SEAT WITH CANTILEVERED TRAY TABLE

Robert C. Iwans, Simsbury; Edward J. Brennan, and Kirby B. Weik, both of Litchfield, all of Conn., assignors to Koehler-Dayton, Inc., New Britain, Conn.

Filed May 25, 1979, Ser. No. 42,982
Int. Cl.[3] A47B *83/02*; A46C *7/62*
U.S. Cl. 297—163 **4 Claims**

1. A vehicular seat comprising
a seat bottom,
a seat back mounted for pivotal movement about a selected pivot axis having a selected upright position,
a tray assembly including
a pair of legs mounted on either side of said seat back for pivotal movement about said seat back pivot axis from a storage position to an in-use position,
said legs each including a first portion extending upwardly from said seat back pivot axis and a second portion joined at one end via a bend to the top of said first portion,
a tray,
means for mounting said tray on the other end of said second portions for selected pivotal displacement relative thereto from a first position wherein the bottom surface of said tray defines a portion of the back surface of said seat back when said legs are in the storage position to a second horizontal position when said legs are in the in-use position,
said bends having an angle selected so that said second portion of each of said legs will be substantially horizontal when said legs are in the in-use position and said



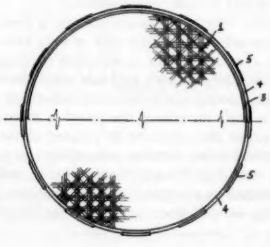
legs being selectively configured so that when said seat back is in said upright position pivotal displacement of said legs about said seat back pivot axis from the storage position to the in-use position will displace said bends from a location substantially forwardly spaced from the back surface of the seat back to a location proximate the back surface and will displace the other end of said second portions from a location proximate the back surface of said seat back to a location substantially rearwardly spaced from the back surface.

4,281,875

PLASTICS MATERIAL SUPPORTING ELEMENT, MOLDED IN THE FORM OF INTERLACED STRAW, EFFECTIVE TO BE FIXED TO A CHAIR BODY

Mario Manzoni, Via Gramsci, 29/B, 20032 Cormano (Milano), Italy

Filed Feb. 26, 1979, Ser. No. 14,910
Claims priority, application Italy, Mar. 17, 1978, 21199/78[U]
Int. Cl.[3] A47C *7/16*
U.S. Cl. 297—452 **1 Claim**



1. The combination of a supporting element (1) acting as a chair seat or back, and a chair frame wherein said chair frame consists of two vertically extending parallel elements (6,7) and an annular element (8) connecting said two parallel elements, said annular connecting element being provided with slots, and wherein the outer one of said two vertically extending parallel elements is provided with an inner upper ridge (9), and wherein the supporting element consists of a substantially flat structure, said structure having a suitable thickness and being made of a suitable plastics material, said structure having the appearance of interlaced straw stems, or the like, defining a

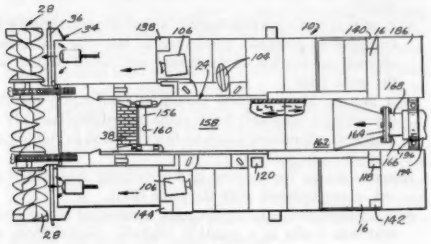
plurality of openings (**2**), said structure being provided with an upper peripheral edge (**3**) and downwardly projecting lugs (**4**), said lugs being provided with spaced tabs (**5**), said tabs being engageable with said slots formed in said annular connecting elements.

4,281,876

TELEVISED REMOTE CONTROL SYSTEM OF A CONTINUOUS MINING MACHINE

John B. Lansberry, Woodland, Pa., assignor to Coalex, Inc., Woodland, Pa.

Filed Sep. 7, 1979, Ser. No. 73,560
Int. Cl.³ E21C *35/08*
U.S. Cl. 299—1 **2 Claims**



1. A remote controlled mining system for recovering particulate material from a seam of such material within the earth bounded above and below by different material comprising:

a continuous mining machine having power driven means thereon for moving said machine through successive seam material cutting cycles which include an advancing movement along a mined entry within the seam in a direction toward the working face of the seam;

light means carried by said continuous mining machine for illuminating portions of the space surrounding said continuous mining machine including portions of the working face disposed forwardly thereof and adjacent portions of the roof, floor and side walls of the mined entry rearwardly of the working face, said light means comprising full spectrum compact gaseous light source means and reflector and lens means for gathering, concentrating and projecting the light source onto the aforesaid portions of the working face;

television camera means carried by said continuous mining machine for establishing electromagnetic signals indicative of the appearance of the illuminated portions of the working face of the seam and the adjacent portions of the roof, floor and side walls, said television camera means comprising a broadcast quality color television camera with zoom lens and automatic focus;

means for transmitting the electromagnetic signals established by said television camera means to a remote control station;

television receiver means at said remote control station operatively connected with said transmitting means for converting said signals to a continuous picture of the appearance of at least a selected portion of the illuminated portions of the working face of the seam and the adjacent portions of the roof, floor, and side walls, said television receiver means being a high resolution color television monitor; and

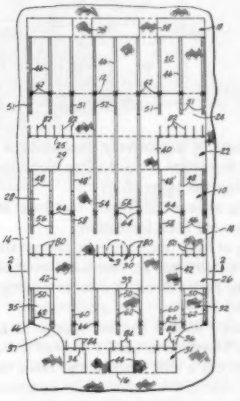
means for enabling an operator at said remote control station to control the cutting cycle of said continuous mining machine so that the material cut during a cycle is cut from the seam up to the different material defining the roof and down to the different material defining the floor based upon the operator distinguishing between the material of the seam and the different material which forms the roof and floor by viewing the continuous picture provided by said television receiver means.

4,281,877

ROCK BOLTING TECHNIQUES FOR FORMING AN IN SITU OIL SHALE RETORT

Allan Sass, Los Angeles, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Nov. 2, 1979, Ser. No. 90,634
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **22 Claims**



1. A method for recovering liquid and gaseous products from an in situ oil shale retort formed in a retort site in a subterranean formation containing oil shale, such an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale, the method comprising the steps of:

excavating formation from within the retort site for forming at least one void extending generally horizontally across the retort site, leaving at least one zone of unfragmented formation within the retort site below such a void, such a zone of unfragmented formation having a generally horizontal free face of formation forming a floor of such a void;

placing a plurality of rock bolts in at least a portion of the unfragmented formation having said horizontal free face of formation forming the floor of such a void;

placing explosive in such a zone of unfragmented formation;

detonating such explosive for explosively expanding formation within such a zone of unfragmented formation upwardly toward said horizontal free face of formation, including toward the rock bolted portion of the free face, for forming a fragmented permeable mass of formation particles containing oil shale in an in situ oil shale retort;

establishing a retorting zone in the fragmented mass;

introducing a retorting gas to the fragmented mass for sustaining the retorting zone and for advancing the retorting zone through the fragmented mass; and

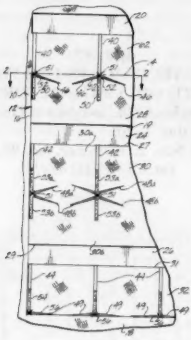
withdrawing liquid and gaseous products of retorting from the fragmented mass on the advancing side of the retorting zone.

4,281,878

METHOD FOR LOADING EXPLOSIVE LATERALLY FROM A BOREHOLE

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Dec. 3, 1979, Ser. No. 99,553
Int. Cl.³ E21C *41/10*
U.S. Cl. 299—2 **42 Claims**



1. A method of explosively expanding a zone of unfragmented rock formation toward a free face adjacent such formation comprising the steps of:

(a) forming at least one main blasthole in such a zone of unfragmented rock formation;

(b) placing at least one explosive charge shaped for forming a high velocity gas jet into such main blasthole with the axis of the high velocity gas jet extending transverse to the blasthole;

(c) detonating such a shaped charge to form at least one auxiliary blasthole in such a zone of unfragmented formation adjacent a side wall of the main blasthole, wherein such an auxiliary blasthole is in communication with the main blasthole and extends away from the main blasthole;

(d) placing explosive into the main blasthole and the auxiliary blasthole; and

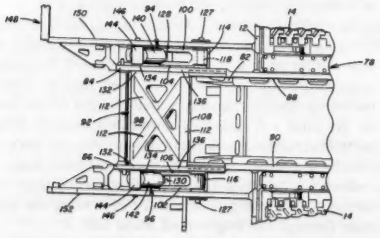
(e) detonating the explosive for explosively expanding the zone of unfragmented rock formation toward the free face.

4,281,879

STABILIZING ASSEMBLY FOR A MINING MACHINE

Maurice K. LeBegue, Argillite, Ky.; Ronald W. Keen, Mount Vernon, and Donald E. Keller, Nashville, both of Ill., assignors to National Mine Service Company, Pittsburgh, Pa.

Filed Sep. 24, 1979, Ser. No. 78,072
Int. Cl.³ E21C *33/00*
U.S. Cl. 299—64 **6 Claims**



1. A stabilizing assembly for a mining machine comprising,

a mining machine body portion mounted on means for propelling said body portion,

said mining machine body portion including a pair of longitudinally extending side walls,

said side walls being spaced apart substantially the width of said mining machine body portion, said side walls each having vertically extending inner and outer surfaces,

stabilizing means pivotally connected to said side walls for moving into engagement with the mine floor to maintain said mining machine body portion in a stabilized position,

a conveyor support frame extending longitudinally on said mining machine body portion between said side walls,

said stabilizing means being positioned in underlying relation with said conveyor support frame,

said stabilizing means including a unitary body portion having a transverse dimension extending between said side walls and beyond the width of said conveyor support frame,

said unitary body portion having lateral edge portions, a first end portion pivotally connected to said side walls, and a second end portion movable into and out of contact with the mine floor,

said unitary body portion including reinforcing members extending across said body portion and substantially the width of said mining machine body portion to rigidify said unitary body portion,

actuator means for moving said stabilizing means into and out of engagement with the mine floor,

said actuator means being pivotally connected at one end to said side walls in a position laterally spaced from said conveyor support frame,

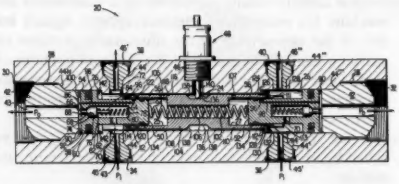
said actuator means being connected to the lateral edge portions of said unitary body portion such that the distance between the pivotal connections of said actuator means and said unitary body portion to said side walls provides for an increased force to be exerted on said unitary body portion to maintain said unitary body portion in contact with the mine floor.

4,281,880

BACK-TO-BACK PROPORTIONING VALVE

Robert F. Gaiser, Stevensville, and Samuel E. Stone, Berrien Springs, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 1, 1979, Ser. No. 80,892
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—6 C **9 Claims**



1. A back-to-back proportioning valve assembly for a cross-split hydraulic braking system having separate first and second hydraulic brake system paths, said first brake system path including a first master cylinder chamber, a left front brake actuator and a right rear brake actuator, said second brake system path including a second master cylinder chamber, a right front brake actuator and a left rear brake actuator, wherein said proportioning valve assembly comprises:

a first housing defining first and second inlet openings for fluid communication with corresponding first and second master cylinder chambers, left and right front outlet open-

ings for communication with corresponding left and right front brake actuators, and left and right rear outlet openings for fluid communication with corresponding left and right rear brake actuators;

first fluid path means within said first housing for direct fluid communication between said first inlet opening and said left front outlet opening such that the inlet fluid pressure at the first inlet opening is substantially equal to the outlet fluid pressure at the left front outlet opening;

second fluid path means within said first housing for direct fluid communication between said second inlet opening and said right front outlet opening such that the inlet fluid pressure at the second inlet opening is substantially equal to the outlet fluid pressure at the right front outlet opening;

a first proportioning valve means disposed in said first housing in fluid communication between said first inlet opening and said right rear outlet opening for proportioning the inlet fluid pressure at said first inlet opening with the outlet fluid pressure at said right rear outlet opening such that the outlet fluid pressure increases at a lower rate than the inlet fluid pressure, said first proportioning valve means having a second housing with a substantially cylindrical first chamber therein, said cylindrical first chamber having a first inlet port connected to said first inlet opening, said cylindrical first chamber having a first outlet port connected to said right outlet openings, said first proportioning valve having a first poppet located in said cylindrical first chamber to define a first orifice between the first poppet and said first outlet opening;

a second proportioning valve means disposed in said first housing in fluid communication between said second inlet opening and said left rear outlet opening for proportioning the inlet fluid pressure at said second inlet opening with the outlet fluid pressure at said left rear outlet opening such that the outlet fluid pressure increases at a lower rate than the inlet fluid pressure, said second proportioning valve means having a third housing with a substantially cylindrical second chamber therein, said cylindrical second chamber having a second inlet port connected to said second inlet opening, said cylindrical second chamber having a second outlet port connected to said left outlet opening, said second proportioning valve having a second poppet located in said cylindrical second chamber to define a second orifice between the second poppet and said second outlet opening;

a first disc located between said first outlet opening and said first proportioning valve means, said first disc having a first projection that extends into said first outlet opening;

a second disc located between said second outlet opening and said second proportioning valve means, said second disc having a second projection that extends into said second outlet openings;

first resilient means for urging said first poppet into continual engagement with said first projection;

second resilient means for urging said second poppet into continual engagement with said second projection;

means for moving said second and third housing of said first and second proportioning valve means with respect to said first and second poppets to adjust the size of the first and second orifices to compensate for changes in the inlet fluid pressure received from the first and second master cylinder chambers;

a first bypass means in said housing for bypassing said first proportioning valve means to provide direct fluid communication between said first inlet opening and said right rear outlet opening when a predetermined first pressure differential develops between the fluid in the first and second master cylinder chambers as presented to the first and second inlet openings, said bypass means allowing the respective pressures at said first inlet and right rear outlet opening to be substantially equal; and

a second bypass means in said housing for bypassing said second proportioning valve means to provide direct fluid communication between said second inlet opening and said left rear outlet opening when a predetermined fluid pressure differential develops between the fluid in the first and second master cylinder chamber as presented to the first and second inlet openings, wherein respective pressures at said second inlet and left rear outlet openings are substantially equal.

4,281,881

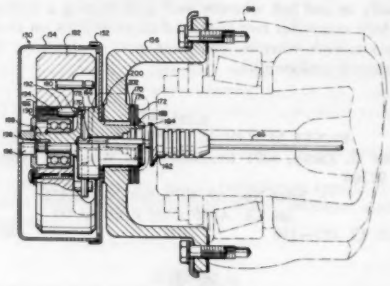
ANTI-LOCKING MECHANISM

George Mekosh, Jr., Warrington, and David O. Hulse, Lionville, both of Pa., assignors to The Budd Company, Troy, Mich.

Continuation-in-part of Ser. No. 939,178, Sep. 5, 1978, abandoned. This application Apr. 3, 1979, Ser. No. 26,795

Int. Cl.³ B60T *8/093*

U.S. Cl. 303—99 **22 Claims**



4. In combination with a source of pressure for actuating a brake for decelerating a wheel on a vehicle,

control means for permitting or preventing the application of said pressure to said brake of said wheel, comprising:

(a) a rotatable manifold member attached to be rotated with said wheel and including an aperture between a chamber leading to a second source of pressure and atmosphere,

(b) an inertia wheel movably mounted to said manifold member to rotate within predetermined limits thereon during acceleration and deceleration of said wheel,

(c) valve means included in said inertia wheel to close or open said aperture leading from said chamber to atmosphere,

(d) stop means connected between said inertia wheel and said manifold member to normally rotate said inertia wheel at the same rate of speed as said manifold member and to normally maintain said valve means in a closed condition,

(e) said stop means being disposed to permit continued movement of said inertia wheel with respect to said manifold member when said wheel is decelerated beyond said predetermined limit to open said valve means thereby to permit the pressure from said second source of pressure to be relieved through the aperture in said manifold member to atmosphere to prevent said braking pressure from actuating said brake.

4,281,882

VEHICLE TRACK WITH I-SHAPED GROUND ENGAGING PROFILES

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Apr. 10, 1978, Ser. No. 895,025

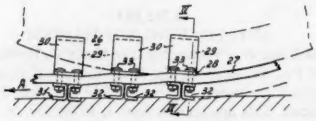
Claims priority, application Netherlands, Apr. 15, 1977, 7704129; Jun. 24, 1977, 7707007

Int. Cl.³ B62D *55/28*

U.S. Cl. 305—35 EB **1 Claim**

1. A vehicle included in the group which comprises tractors, motorcars, soil cultivating machines, trucks, wagons and the like, wherein the vehicle comprises a frame and ground engag-

ing wheels mounted on said frame, a track arranged around at least two of said ground engaging wheels, said track comprising a continuous belt of flexible material, said belt being provided with profiles which include parts extending substantially parallel to the belt at the circumference of said belt and further



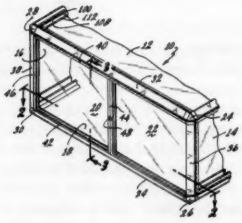
parts spaced at a distance therefrom, said parts and further parts connected by other parts extending substantially normally to said belt whereby said profiles have a cross-section which comprises two U-shaped cross-sections on their sides back-to-back whereby said cross-sections appear to have an I-shaped configuration.

4,281,883

PANEL MOLDING SUPPORT STRUCTURE

Ralf G. Zacky, 4491 Deanwood Dr., Woodland Hills, Calif. 91364

Filed Nov. 19, 1979, Ser. No. 95,416
Int. Cl.[3] A47F *3/00*; F16B *12/00*
U.S. Cl. 312—140 **20 Claims**



1. A panel molding support structure for use with a display case, including

an outer frame located within a particular plane including at least four tubular members, each having substantially the same cross-section and interconnected at end portions by joints to form the outer frame and with the four tubular members located within the particular plane and with the tubular members having a square cross-section and turned angularly to have an angular orientation and with each of the four tubular members including an angular outer surface located adjacent to each other and forming an inner frame surface to receive an inner frame,

an inner frame located within the particular plane including at least four moldings each extending along and complementary only to the angular outer surface of each of the tubular members to form the inner frame and with the inner frame located within inner frame surface of the outer frame and within the particular plane,

the moldings each including only a single angular inner surface extending along the length of the molding and with the angular inner surfaces matching the angular orientation of the inner frame surface of the tubular members to have the moldings forming the inner frame matching and conforming only to the inner frame surface of the outer frame, and

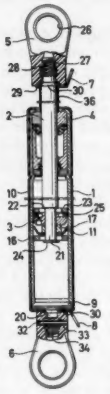
the moldings each including a channel extending along the length of the molding and with the channels receiving and supporting a panel member within the inner frame and within the particular plane.

4,281,884

ELECTRICALLY CONDUCTIVE PNEUMATIC SPRING

Herbert Freitag, Koblenz-Metternich; Klaus Schnitzius, Rheinbrohl; Martin Müller, and Willi Schäfer, both of Kesselheim, all of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Continuation of Ser. No. 782,012, Mar. 28, 1977, abandoned. This application Jun. 21, 1979, Ser. No. 50,690
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614927
Int. Cl.[3] H01R *41/00*; H01H *3/00*; T16F *9/02*; B60Q *18/0 4*
U.S. Cl. 339—9 R **34 Claims**



1. In a pneumatic spring-type electrical connector including a cylinder member having an axis and bounding a sealed cavity therein, a piston rod member secured to said cylinder member for axial movement inward and outward of said cavity, respective fastening elements on said members outside said cavity, respective terminals on said members outside said cavity, said cylinder member having an axially elongated face portion of electrically conductive material in said cavity, said face portion carrying a film of non-conductive lubricant, a compressed gas in said cavity biasing said piston rod member outward of said cavity, and current carrier means permitting flow of electric current between said terminals, the improvement in said current carrier means which comprises:

(a) a conductive contact element fixed on said piston rod member and having at least one contact face;

(b) resilient means biasing said at least one contact face into sliding engagement with said axially elongated face portion during said movement of the piston rod member with a force sufficient for breaking said lubricant film; and

(c) conductive means connecting said face portion and said contact face to said terminals respectively.

4,281,885

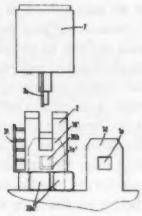
LINE TELECOMMUNICATIONS CABLE END SYSTEM

Horst Forberg, and Wolfgang Radelow, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 9, 1979, Ser. No. 18,896
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811812
Int. Cl.[3] H01R *15/14*
U.S. Cl. 339—14 R **13 Claims**

1. A line telecommunications cable end system adapted for supporting and fixing a lead-in cable end and also adapted for connecting terminal and/or isolating strips thereto, said cable end system comprising at least one pair of parallel earthing strips spaced a distance equal to the distance between end faces of said terminal and/or isolating strips, each earthing strip

having a row of elongated tags formed integrally on the top surface, each said tag being adapted to extend through one of the end faces of a corresponding number of terminal and/or



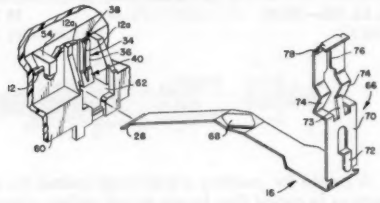
isolating strips with LSA contacts, the length of each said tag being such that it is also adapted to contact any fitted extra equipment such as a surge diverter.

4,281,886

ELECTRIC WIRE TERMINAL CONNECTING STRUCTURE

Jonathan I. Kaplan, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 16, 1979, Ser. No. 67,029
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—97 R **13 Claims**



1. An electric wire terminal connection comprising:

a non-conductive mounting structure for supporting and positioning an end portion of a conductive wire, said mounting structure defining a bracket formation having a front face extending between longitudinally spaced head and foot portions, said foot portion having a wire end receiving pocket coextensive with said front face, said head portion having a projecting post also generally coextensive with said front face and extending from the end of said bracket formation opposite from said foot portion;

means for engaging and holding the conductive wire at a point spaced from said end portion thereof after said end portion is received in said pocket, positioned along said face and bent about said projecting post; and

a conductive contact terminal having a leaf-like mounting portion adapted to be secured to said bracket formation, said terminal mounting portion having a slot to receive and electrically contact said end portion of said conductive wire bent about said projecting post.

4,281,887

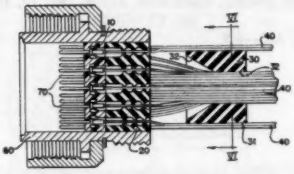
ELECTRICAL CONNECTOR

Vincent A. Luca, Jr., Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 28, 1979, Ser. No. 16,708
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **16 Claims**

1. In combination with an electrical connector of the type having a housing, a plurality of electrical contacts, means for mounting said contact within a said housing, and a moisture sealing grommet comprised of a resilient material having a plurality of longitudinal bores adapted to receives wires terminating at respective contacts, said grommet located adjacent said contact mounting means, the improvement comprising:

a second grommet spaced apart from the moisture sealing grommet and the contact mounting means and having a plurality of grooves for receiving some of said wires arranged about the outer periphery and a central passage having a diameter large enough for passing other of said wires extending from a first surface to a second surface,



one of said surfaces extending radially inwardly to said central passage, said wires passing through said central passage and said grooves for connection to different ones of said electrical contacts; and

means for mounting said second grommet adjacent said moisture sealing grommet,

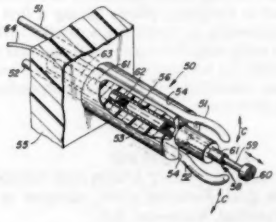
said second grommet preventing radial forces applied to the wires from being transmitted to the moisture sealing grommet.

4,281,888

APPARATUS FOR TESTING LEADS OF FUSE HOLDERS

Gary G. Seaman, Broomfield, Colo., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 7, 1979, Ser. No. 73,347
Int. Cl.³ H01R *9/00*
U.S. Cl. 339—151 B **6 Claims**



1. Apparatus for providing electrical contact with a plurality of leads individually located in the walls and at the base of a fuse holder socket shaped to accept a tubular fuse, the apparatus comprising:

a tubular body arranged to fit into the socket;

a base attached to one end of the body;

a plurality of free ended spring fingers of conductive material extending from the base along the length of the tubular body, the free ends of the spring fingers projecting outward from the body and capable of moving toward and away from the body;

an electrical lead extending through the center of the body to the base; and

a spring-loaded probe extending from the end of the body opposite the base and connected to the central electrical lead;

the parts being so constructed and arranged that, when the body is inserted into the socket, the plurality of spring fingers are initially cammed inwardly by the walls of the socket, following which the plurality of fingers spring outwardly to physically and electrically contact associated ones of the plurality of leads located in the walls of

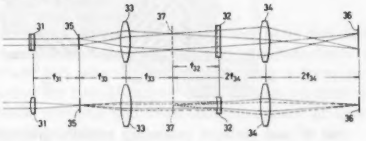
the socket and, as the probe comes into contact with the lead at the base of the socket, it is forced rearward with respect to the body so as to assure good electrical contact.

4,281,889

LIGHT BEAM SCANNING SYSTEM

Masaru Noguchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 12, 1979, Ser. No. 84,342
Claims priority, application Japan, Oct. 19, 1978, 53-128884
Int. Cl.³ G02B *21/00*
U.S. Cl. 350—6.8 **3 Claims**



1. A light beam scanning system having a rotary multi-surfaced mirror comprising in order relative to a light source:

(a) a uni-directional convergent optical element for converging an incident light beam to form on a reflection surface of said rotary multi-surfaced mirror a first linear image parallel to its scanning direction;

(b) first convergent optical means for converging the light beam reflected by said multi-surfaced mirror to form a second linear image perpendicular to the scanning direction;

(c) a uni-directional divergent optical element disposed at a position opposite to said first convergent optical means with respect to the second linear image, said divergent optical element being adapted to diverge the light beam in a direction perpendicular to the scanning direction; and

(d) second convergent optical means for converging the light beam to form a point image on a scanning surface;

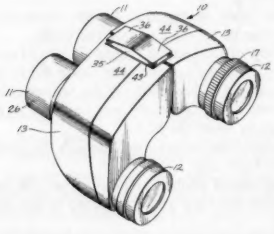
whereby said second linear image and said point image are positioned at conjugate planes having a first object and image relationship in the direction parallel to the scanning direction while said first linear image and said point image are positioned at conjugate planes having a second object and image relationship in direction perpendicular to the scanning direction.

4,281,890

OPTICAL ADJUSTMENT KNOB FOR BINOCULAR

Gerrit A. Van Exel, Fullerton, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Mar. 23, 1979, Ser. No. 23,316
Int. Cl.³ G02B *7/06*
U.S. Cl. 350—77 **6 Claims**



1. In a binocular assembly having a housing supporting a pair of telescopes having moveable optical elements to effect an optical adjustment, the telescopes having generally parallel optical axes along which images of an object are viewed, the housing having an upper surface when the binocular is held in a normal viewing position; an improved adjustment mechanism comprising:

an adjustment knob movably mounted on the housing to be rotatable about an axis which is generally parallel to an imaginary line connecting and perpendicular to the optical axes, the knob having an exposed upper portion defining a pair of finger-contacting platforms which are radially spaced from and angularly spaced apart with respect to the adjustment axis, the knob platforms being positioned adjacent the housing upper surface so the knob can be rotated bidirectionally in seesaw fashion by a pair of fingers positioned over the upper surface and in contact with the knob platforms, the knob apart from the exposed upper portion being enclosed in the housing; and

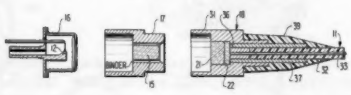
a coupling means connecting the knob to the moveable optical elements for shifting the elements along the respective optical axes in response to rotation of the knob.

4,281,891

DEVICE FOR EXCELLENTLY COUPLING A LASER BEAM TO A TRANSMISSION MEDIUM THROUGH A LENS

Tsuneo Shinohara, and Hiroo Yonezu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 23,917
Claims priority, application Japan, Mar. 27, 1978, 53/39540[U]; Jul. 19, 1978, 53/88757
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.18 **19 Claims**



1. A device for coupling a laser beam emitted by a laser element to an optical fiber having an end surface, comprising:

a beam converging lens responsive to said laser beam for producing a reshaped laser beam;

a fiber holder for holding said optical fiber with said end surface;

a block of a solid material transparent to said reshaped laser beam and having a first and a second surface;

a mass of a binder transparent to said reshaped laser beam between said second and said end surfaces and between said second surface and said fiber holder; and

fixing means for fixing said lens and said fiber holder to each other with said first surface made to receive said reshaped laser beam and with said reshaped laser beam made to focus substantially on said end surface through said block and said binder mass, wherein said solid material and said binder have refractive indexes that are approximately equal to that of said optical fiber.

4,281,892

FIBER OPTIC CONNECTOR

Mansur N. Sitabkhan, Brecksville, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 26, 1979, Ser. No. 61,057
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.21 **5 Claims**

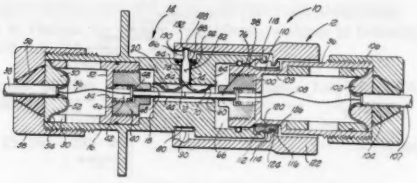
1. A fiber optic connector comprising:

first and second axially mating connector members each adapted to carry an optical fiber ferrule;

said first connector member having a passage therethrough adapted to receive the ferrules in its opposite ends;

said passage including a pair of longitudinally extending flat sides disposed at an angle relative to each other defining a generally V-shaped channel;

spring means carried by said first connector member and mounted in said passage adapted to be urged toward said channel for biasing the ferrules into said channel to align the optical fibers in the ferrules; and



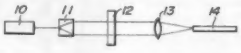
actuating means carried by said second connector member axially slidable relative to said first connector member and said spring means, said actuating means being operatively with said spring means for automatically urging said spring means toward said channel upon axial mating of said connector members.

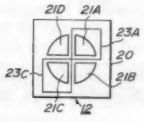
4,281,893

SUPER WIDE BAND LIGHT TRANSMITTING SYSTEM

Ryozo Yamada, Hamamatsu; Naomichi Okamoto, Kami, and Toshimi Meiri, Hamamatsu, all of Japan, assignors to President Shizuoka University, Shizuoka Pref., Japan

Filed Sep. 13, 1979, Ser. No. 75,185
Claims priority, application Japan, Sep. 29, 1978, 53-120979
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.31 **5 Claims**





1. A super wide bandwidth light transmitting system, comprising:

(a) a laser for producing TEM_{00} waves;

(b) at least one graded index optical fiber including a core having a dielectric constant which continuously decreases from its center along its radius, and a cladding having a uniform dielectric constant larger than that of the core at the interface between the core and the cladding;

(c) an optical input to said graded index optical fiber, and

(d) a mode filter disposed between said laser and said optical input for increasing the bandwidth of the system by eliminating waves of the modes with lower azimuthal numbers which produce a large amount of dispersion-type signal distortion at frequencies close to a cutoff frequency of the system.

4,281,894

VERY LOW ABSORPTION, LOW EFFICIENCY LASER BEAMSAMPLER

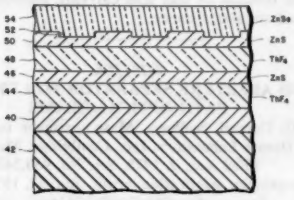
Jayanta K. Guha, Canoga Park, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 21, 1980, Ser. No. 113,443
Int. Cl.³ G02B *5/18, 5/08*
U.S. Cl. 350—162 R **6 Claims**

1. A very low absorption, low efficiency, laser beamsampler comprising:

a plane reflective surface;

a plurality of dielectric pairs overlying said reflective surface, each of said pairs comprised of a first layer of dielectric material having a high refractive index and a second layer of dielectric material having a low refractive index, said first and second layers being deposited in one-quarter wavelength optical thicknesses;



a shallow groove diffraction grating formed in the top surface of the top layer of the top dielectric pair; and

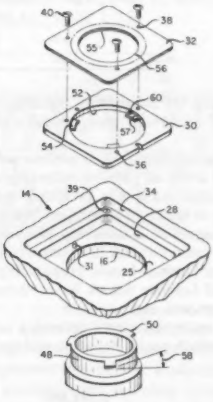
a protective layer of a third dielectric material applied over said diffraction grating, said third material applied to an optical thickness of substantially one-half wavelength, said third material having an index of refraction similar to, but different than, that of the dielectric material of said top layer of said top dielectric pair.

4,281,895

QUICK CHANGE LENS MOUNT

Siegfried H. Mohr, Santa Clara, Calif., assignor to Quantor Corporation, Mountain View, Calif.

Filed Apr. 12, 1979, Ser. No. 29,506
Int. Cl.³ G02B *7/02, 7/14;* F16L *37/24;* F16B *7/20*
U.S. Cl. 350—257 **4 Claims**



1. A lens mounting for enabling rapid changing of lenses comprising a

support plate, a

female plate member carried by said support plate, said female plate member having a plurality of equally spaced lugs positioned to provide a recess from one surface of said plate member and extending inwardly from an interior aperture thereof, a

single piece planar clamping member abutting said female plate member and having an annular resilient interior portion thereof extending from an interior aperture outwardly at least to the diameter of the aperture of said plate member and substantially overlapping and spaced from said lugs,

means securing said clamping member and said female plate member to said support plate, and a

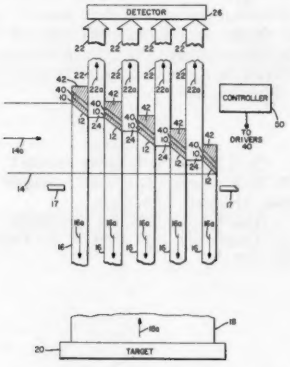
lens carrying member comprising a lens holder and a male barrel member carrying said lens holder and having a plurality of outwardly extending lugs thereon engageable in said recess with said lugs of said female plate member and with said resilient portion of said clamping member for securing said lens carrying member in axial position upon rotation of said lens carrying member a predetermined angular distance.

4,281,896

SHARED APERTURE SEPARATOR FOR RECIPROCAL PATH OPTICAL BEAMS

Joseph D. Coccoli, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 2, 1978, Ser. No. 930,140
Claims priority, application Japan, Jun. 22, 1979, 54-78945
Int. Cl.[3] G02B *27/14*
U.S. Cl. 350—171 **13 Claims**



1. A method for monitoring conditions along the propagation path of reciprocal path optical signals, comprising the steps of:

directing an incident laser beam toward a target by way of a stepped array of parallel reflecting surfaces arranged on spaced apart elements, in which said reflecting surfaces overlap as seen by the incident beam and the elements are spaced apart in a direction perpendicular to said path, whereby said incident laser beam is split into a plurality of coherent laminar beams propagating toward said target, and said laminar beams have controlled relative phase displacements, and

detecting an optical signal returning on said path from said target which passes between said spaced apart elements.

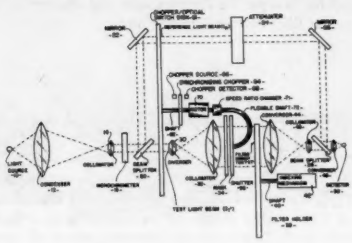
4,281,897

PHOTOMETRIC SYSTEM INCLUDING A TIME-DIVISION OPTICAL ATTENUATOR

Taylor C. Fletcher, 1534 Sunny Crest Dr., Fullerton, Calif. 92635

Filed Jan. 10, 1979, Ser. No. 2,398
Int. Cl.[3] G05D *25/00*
U.S. Cl. 350—274 **27 Claims**

1. A photometric system comprising: first means for producing a pulsating light beam; time-division optical attenuator means positioned in the path of the pulsating light beam, and including second means for producing a plurality of like pulsating light beams in response to the pulsating light beam from the first means, and third means adjustable to pass selected ones of the light pulses of the pulsating light beams from the second means to vary the average amount of light passed thereby; a photoelectric detector positioned in the path of the pulsating light beam from the time-division optical attenuator means;



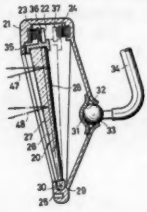
and further optical attenuator means positioned in the path of the pulsating light beam between the first means and the photoelectric detector.

4,281,898

AUTOMATIC ANTIGLARE REARVIEW MIRROR

Akio Ochiai, Shizuoka; Noriyuki Iida, Fujieda, and Yasumasa Yoshimura, Shizuoka, all of Japan, assignors to Murakami Kaimeido Co., Ltd., Japan

Filed Feb. 7, 1979, Ser. No. 10,128
Int. Cl.[3] G02B *17/00*
U.S. Cl. 350—281 **11 Claims**



1. A mirror mechanism for selectively producing an image of high or low brightness depending upon the intensity of incident light, comprising:

(a) support means;

(b) a mirror assembly supported by the support means for pivotal motion between two predetermined operating positions to provide the high and low brightness images;

(c) permanent magnet means secured to either of the support means and the mirror assembly;

(d) electromagnet means secured to the other of the support means and the mirror assembly in opposed relationship to the permanent magnet means;

(e) the electromagnet means including core means normally coacting with the permanent magnet means to hold the mirror assembly in a selected one of the operating positions;

(f) sheets of magnetic rubber attached to at least one of said permanent magnet means and said electromagnet means to effect noise reduction;

(g) a light sensitive element arranged to sense the intensity of light impinging on the mirror assembly; and

(h) electric circuit means responsive to the sensing by said light sensitive element of a change in the intensity of the incident light, for energizing the electromagnet means for a preset length of time for causing the pivotal motion of the mirror assembly from one to the other of the operating positions by virtue of magnetic attraction and/or repulsion between the permanent magnet means and the electromagnet means;

(i) whereby the energization of the electromagnet means is

required only for moving the mirror assembly between the operating positions.

4,281,899

ADJUSTING DEVICE FOR MOTORCAR MIRRORS

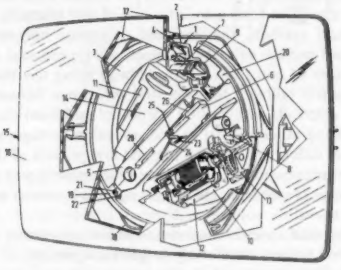
Aane A. Oskam, De Meern, Netherlands, assignor to Industrie Koot B.V., Montfoort, Netherlands

Filed Sep. 19, 1979, Ser. No. 76,953

Claims priority, application Netherlands, Jul. 26, 1979, 7905806

Int. Cl.³ B60R *1/06*; G02B *7/18*

U.S. Cl. 350—289 **6 Claims**



1. A device for adjusting the mirror of an automotive vehicle about at least two perpendicular axes, said device comprising:

a cup-shaped housing having a raised edge and a ridge extending along a median plane of said housing;

said ridge having an upper edge having at the center of the length thereof a substantially semi-cylindrical fulcrum;

a tiltable adjusting ring mounted in said housing for relative movement with respect thereto, said ring being in sealing contact with said raised edge of said housing in all positions of said ring;

a stiffening element of U-shaped cross-sectional configuration defined by two legs, said stiffening element having opposite ends received in diametrically opposed holes in said adjusting ring, and said stiffening element being mounted in contact with said semi-cylindrical fulcrum of said ridge and with said two legs positioned on opposite sides of said ridge;

first and second mirror adjustment members mounted for engagement with said adjusting ring at positions off-set from each other by 90° with respect to said adjusting ring, each said adjustment member including a rack portion; and

first and second drive and transmission means for achieving relative movement of said ring with respect to said housing in at least two perpendicular axes, said first and second drive and transmission means being arranged mirror-symmetrically relative to said median plane of said ridge of said housing and extending in directions enclosing an acute angle, each said drive and transmission means comprising a motor having an output shaft, a planetary transmission system mounted on said motor output shaft and having an output shaft, and a gear fixed to said transmission system output shaft and engaging a said rack portion of a respective said adjustment member.

4,281,900

FRONTAL REFLECTOR BRACING

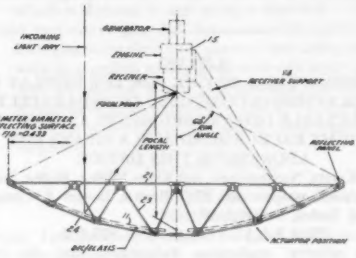
I. Earl Lewis, Jr., Menlo Park, Calif., assignor to Ford Aerospace & Communications Corp., Detroit, Mich.

Filed Oct. 31, 1979, Ser. No. 90,151

Int. Cl.³ G02B *5/10, 7/18*

U.S. Cl. 350—292 **10 Claims**

1. A reflector system having a generally dish-shaped concave reflective surface and further comprising a frontal bracing system with front members extending between points positioned generally in a plane covering the opening of said dish shaped concave reflective surface, and back radial members, positioned adjacent said reflective surface on the convex side thereof, having an orientation generally following the curvature of said reflective surface of said reflector system, a plurality of rigid bracing truss members connecting said front members and said back radial members so that a portion of said frontal bracing system is positioned on the energy receiving and transmitting side of said reflector and provides a structural support for said reflective surface;



wherein each of said back radial members extends across substantially the entire diameter of said reflective surface.

4,281,901

ELECTRODE STRUCTURE IN DISPLAY DEVICE

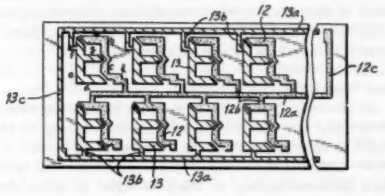
Yoshito Ushiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 10, 1978, Ser. No. 904,651

Claims priority, application Japan, May 11, 1977, 52-54116

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—336 **8 Claims**



1. An improvement in an electrode structure in a display device for operation in a multiplexing mode, said device including at least two panel substrates, a display material therebetween, electrode segments disposed in a plurality of first groups on one of said substrates said segments in each of said first groups being arranged in individually-activatable first subgroups, said first groups being disposed for displaying a plurality of characters in each of a plurality of spaced-apart rows, the term "rows" including but not being restricted to rows and columns, the arrangement of segments into subgroups being the same for all of said groups;

electrode segments in a plurality of second groups on the other of said substrates, each of said second groups being disposed opposite one of said first groups for cooperating therewith in producing display of a character, said segments in each of said second groups being arranged in individually-activatable first and second common electrodes, the arrangement of said segments into said first and second common electrodes being the same for all of said second groups; first trunk lines connecting together all of said first common electrodes, and second trunk lines con-

necting together all of said second common electrodes, said improvement comprising the disposition of said first and second trunk lines alternately between and at the outer sides of said plurality of rows so that only one trunk line is disposed between any pair of rows, thereby eliminating the need for an insulating space between adjacent trunk lines and increasing the fraction of the display area of said display device available for displaying said characters.

4,281,902

ELECTRO-OPTICAL DEVICE FOR THE DISPLAY OF DARK SYMBOLS COMPOSED OF SEPARATELY SELECTABLE DISPLAY SEGMENTS AGAINST A BRIGHT BACKGROUND AND A MEANS FOR ADDRESSING THIS DEVICE

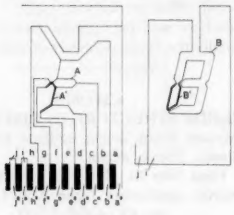
Allan R. Kmetz, Nussbaumen, and Klaus Müller, Baden, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 17, 1978, Ser. No. 925,539

Claims priority, application Switzerland, Jul. 29, 1977, 9397/77

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—336 **4 Claims**



1. An electro-optical indicating device for representing a plurality of numerical symbols consisting of seven separately controllable indicating elements arranged in the shape of a numeral 8, said indicating device comprising:

a front electrode;

a rear electrode;

an electro-optical activatable medium located between said front and rear electrodes, said medium acting to absorb light in areas thereof where a potential difference of less than a transition voltage is imposed across said medium, said medium acting to transmit light in areas thereof where a potential difference at least equal to said transition voltage is imposed, siad transition voltage being specific to said medium;

said front electrode being formed of a first portion (h) which can apply a voltage across said medium in regions outside the regions of said indicating elements and seven second portions (a-g), each of which can apply a voltage across said medium in the region of one of said indicating elements, said portions being isolated from each other by very thin recesses so that the front electrode is substantially covered by said first and second portions;

said rear electrode being formed of a first portion (i) which forms the outer and inner boundaries for said indicating elements and for applying a voltage to the background region of said numeral 8 and a second portion (j) for simultaneously applying a voltage to all of said indicating elements, said first and second portions of said rear electrode being isolated from each other by very thin recesses so that the rear electrode is substantially covered by said first and second portions;

each of said portions being connected to an electrical contact for receiving electrical signals from a control circuit;

each of said second portions of said front electrode (a-g) consisting of a segment electrode for one of said indicating elements and a supply line;

said second portion of said rear electrode (j) consisting of a first part in the shape of a numeral eight for applying a voltage to all of said indicating elements and a supply line;

wherein the said first portion of the front electrode (h) overlays the supply line of said second portion of said rear electrode (j);

wherein the said first portion of the rear electrode (i) overlays the supply lines of said plurality of second portions of said front electrode (a-g);

wherein said portions of said front and rear electrodes are selectively supplied with electrical signals from said control circuit to form a specific one of said plurality of numerical symbols, the potential difference between said second portion of said rear electrode (j) and said second portions of said front electrode (a-g) being less than said transition voltage, the potential difference between the rear electrode and the first portion of said front electrode (h) being at least equal to said transition voltage, the potential difference between the said first portion of the rear electrode (i) and the supply lines of the plurality of second portions of said front electrode (a-g) being at least equal to said transition voltage; and

whereby said specific numerical symbol appears as a dark symbol against a uniformly bright background.

4,281,903

ELECTRO-OPTIC PASSIVE DISPLAY CELL

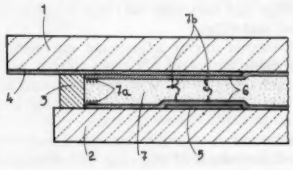
Fereydoun Gharadjedaghi, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Feb. 1, 1979, Ser. No. 8,239

Claims priority, application Switzerland, Feb. 6, 1978, 1272/78

Int. Cl.³ G02F *1/137*

U.S. Cl. 350—349 **6 Claims**

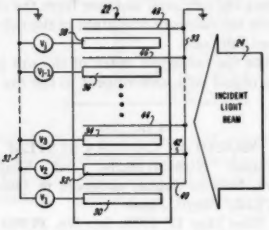


1. An electro-optic passive display cell comprising: two substantially parallel spaced plates; a frame sealed between said plates and defining a tight chamber therebetween; control electrodes arranged on the inner facing surfaces of said plates for providing an electric field therebetween; a coating of homeotropic alignment material covering said inner surfaces and said electrodes, an active component disposed in said chamber, said active component comprising a mixture of a nematic liquid crystal having a negative dielectric anisotropy, dichroic molecules and a chiralic compound capable of providing a helical structure to the said active component when an electric field is applied and a homeotropic structure in the absence of an applied electric field, the concentration of the said chiralic compound being selected to provide a pitch of the helical structure having a value substantially comprised between 0.9 and 3 times the distance between plates whereby satisfactory readable contrast is provided between areas under effect of an electric field and areas where such electric field effect is absent.

4,281,904
TIR ELECTRO-OPTIC MODULATOR WITH INDIVIDUALLY ADDRESSED ELECTRODES

Robert A. Sprague, Saratoga, and Richard V. Johnson, Pasadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 21, 1979, Ser. No. 40,607
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—356 **15 Claims**



1. An electro-optic modulator for providing modulated phase fronts of light incident thereon comprising:

an electro-optical material,

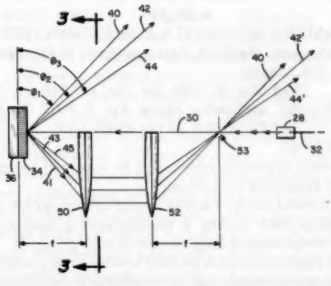
an electrode pattern array formed on a predetermined surface of said material, said electrode pattern array comprising first and second sets of electrodes, each of the electrodes of said first set being addressable by individual voltage levels, said second set of electrodes being connected to a common voltage level, the voltage levels applied to said first set of electrodes inducing an electric field adjacent said predetermined surface, and

means for generating light and directing such generated light in a manner such that the light is incident on the material and suffers a single internal reflection from said predetermined surface and travels in a direction substantially parallel to the length of said first and second sets of electrodes, said electric field producing a simultaneous phase modulation of the incident light beam corresponding to the location of each electrode, the local magnitude of which is related to the voltage level applied to that electrode.

4,281,905
MAGNETO-OPTIC LIGHT DEFLECTOR BEAM RECOMBINATION APPARATUS

William A. Harvey, and Ernest J. Torok, both of Minneapolis, Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,917
Int. Cl.³ G02F *1/31*; G02B *27/10*
U.S. Cl. 350—377 **5 Claims**



1. A light deflection system, comprising:

a diffraction grating;

a source of an input light beam that is directed normally incident to the near surface of said diffraction grating and along an input optical axis;

a mirror on the far side of said diffraction grating reflecting said input laser light beam back through said diffraction grating for generating a single 0'th order light beam directed back along said input optical axis and a pair of conjugate 1'st order light beams;

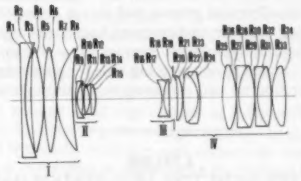
a pair of converging half-lenses that are formed from a single converging lens the center of which is removed and which is then cut in half along a diameter;

said two converging half-lenses oriented superposed with their planes parallel to the plane of said diffraction grating, with their optical axes aligned with said input optical axis, with the nearest converging half-lens located one focal length away from the plane of said diffraction grating and the two converging half-lenses separated two focal lengths.

4,281,906
ZOOM LENS

Kazuo Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,331
Claims priority, application Japan, Mar. 27, 1978, 53-35236
Int. Cl.³ G02B *15/18*
U.S. Cl. 350—427 **3 Claims**



1. A zoom lens comprising:

a positive first lens group having a focusing function;

a negative second lens group having a zooming function;

a negative third lens group actuated in synchronism with said second lens group to be moved for zooming purposes;

an always-fixed positive fourth lens group for focusing the light flux from said negative third lens group on a predetermined plane;

said first lens group including, from front to rear, a negative 1-1th lens, a positive 1-2th lens, a positive 1-3th lens and a positive 1-4th lens, and an air lens defined by said negative 1-1th lens and said positive 1-2th lens having a negative power, wherein the axial thickness of said negative air lens is thicker than that of said negative 1-1th lens and thinner than that of said positive 1-2th lens; and

said second lens group having at least two negative lenses on the object side and a cemented lens of a positive lens element and a negative lens element at the rearmost position.

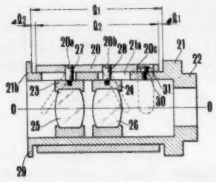
4,281,907
ARRANGEMENT FOR ADJUSTING A MEMBER IN A LENS BARREL FOR EFFECTING A ZOOMING FUNCTION ZOOM LENSES

Shigeru Kamata, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,806
Claims priority, application Japan, Aug. 21, 1978, 53-114783[U]
Int. Cl.³ G02B *7/10*
U.S. Cl. 350—427 **2 Claims**

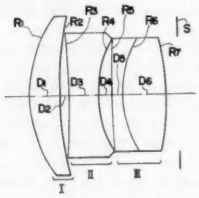
1. A mechanism for adjusting the position of a cam member which contributes to the zooming effect in a lens barrel of a zoom lens, comprising:

(a) a fixing member having a guide for moving a photo-taking lens in an axial direction;
(b) a cam member having a cam groove for performing the zooming function of the photo-taking lens in cooperation with the above-described straight guide, said cam member being fitted to said fixing member and having a range of axial movement with reference to said fixing member;
(c) an encasing barrel connected in unison with the cam member by a fastening member; and
(d) adjusting means for adjustment of the axial displacement of said cam member, said adjusting means being provided



with a circumferential groove formed in the outer circumference round the optical axis of said cam member, an eccentric roller arranged to fit in the circumferential groove and a fastening member which pivotally carries said eccentric roller to permit the roller to rotate within said circumferential groove and also is arranged to carry said fixing member, said encasing barrel which is disposed over the circumferential groove of said cam member being provided with a piercing hole for permitting a rotating operation on said eccentric roller through said piercing hole.

4,281,908
TESSER TYPE OBJECTIVE LENS SYSTEM HAVING A REAR APERTURE STOP
Tamikazu Yamaguchi, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 4, 1979, Ser. No. 26,829
Claims priority, application Japan, May 10, 1978, 53/55856
Int. Cl.³ G02B *9/20*
U.S. Cl. 350—476 **7 Claims**

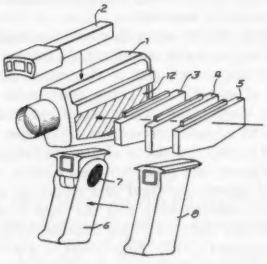


1. An improved tesser type objective lens system having a rear aperture stop comprising:
a first positive meniscus lens convex to the object side;
a second negative lens located at the image side of the first positive meniscus lens;
a third positive doublet located at the image side of the second negative lens, the third positive doublet consisting of a positive element and a negative element cemented to the positive element by an intermediate cemented surface convex to the object side; and
an aperture stop located at the image side of the third doublet, wherein the lens system fulfills the following conditions:

0.3	<	$D_3/(D_1 + D_2 + D_3)$	<	0.45
0.05F	<	D_3	<	0.08F
0.03F	<	D_4	<	0.045F
−2.4F	<	R_3	<	−1.6F
0.25F	<	R_6	<	0.33F
0.13	<	N_4-N_3	<	0.22
		$(N_1 + N_4)/2 > 1.75$		

wherein:
F represents the focal length of the whole lens system;
D_i represents the i-th axial distance from the object side;
R_i represents the radius of curvature of the i-th surface from the object side; and
N_i represents the refractive index of the i-th glass material from the object side with respect to the ray of d-line.

4,281,909
MODULAR CAMERA SYSTEM
Takao Ishibashi, Higashiyamato, and Kenjiro Osonoi, Tokorozawa, both of Japan, assignors to Osawa Precision Industries, Ltd., Tokyo, Japan
Filed May 17, 1979, Ser. No. 39,993
Claims priority, application Japan, May 22, 1978, 53-060058
Int. Cl.³ G03B *31/00, 19/18*
U.S. Cl. 352—25 **16 Claims**



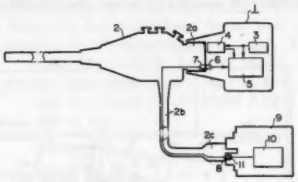
1. A modular camera system, comprising:
A basic operation camera including a camera housing, an image forming optical system, an image focal plane arrangement and having basic imaging and camera functions; and,
a selectively attachable and connectable module for providing additional camera and imaging function controls, said module including module control means for controlling the operation of said basic camera concerning predetermined camera and imaging functions when said module is attached to said basic camera, said module including means for changing at least one of said basic imaging and camera functions.

4,281,910
CAMERA APPARATUS FOR ENDOSCOPE
Syuichi Takayama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan
Filed Mar. 5, 1980, Ser. No. 127,515
Claims priority, application Japan, Apr. 2, 1979, 54/39610
Int. Cl.³ G03B *29/00;* **A61B** *1/04*
U.S. Cl. 354—62 **7 Claims**

1. A camera apparatus adapted to be mounted on an endoscope, said apparatus comprising:
a first electrical circuit located in said camera which must be energized both during a photographing operation and when no photographing operation is in progress;
a second electrical circuit located in said camera which must be energized during said photographing operation;
a battery located in said camera for energizing at least said first electrical circuit;
a connection terminal located on said camera and adapted to be connected to an external power supply associated with

the endoscope when said camera is connected to the endoscope; and

detecting means for detecting whether said camera apparatus if mounted on an endoscope, said detecting means connecting said connection terminal to said second electrical circuit during said photographing operation when said camera apparatus is mounted on the endoscope.



4,281,911

MOTORIZED FILM-TRANSPORTING MECHANISM

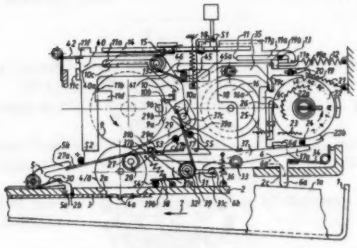
Dieter Engelsmann, Unterhaching; Reinhard Nicko; Leo Lippl, both of Munich, and Dieter Maas, Pöring, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,123

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2915098

Int. Cl.³ G03B *1/18*

U.S. Cl. 354—173 **6 Claims**



1. In a roll film camera having a housing with a back wall movable between open and closed positions, a film-transporting and shutter-cocking arrangement comprising a film counter having a projection and being movable to counting position in response to closing of the back wall and to zero position in response to opening of the back wall; switch means operative for controlling the supply of electrical energy to a camera motor and being movable to closed position in response to insertion of film into the camera and to open position in response to the absence of film in the camera; a control lever having an arm engaging said projection when said film counter is in the zero position and becoming disengaged therefrom in response to repeated stepwise operation of the film counter; a switch in series with said switch means and being closed when said back wall is closed; and a blocking lever engaged by said control lever when said arm engages said projection and becoming released from said control lever when said arm disengages from said projection, so that said blocking lever can cooperate with a film metering means upon transportation of the film by the length of a film frame resulting in deenergization of the motor.

4,281,912

CONTROL CIRCUIT FOR CAMERA OR MOTOR DRIVE DEVICE

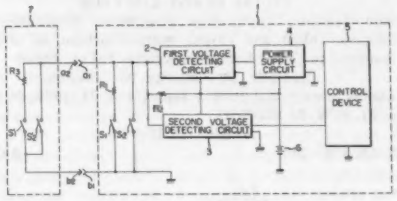
Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,761

Claims priority, application Japan, Apr. 21, 1979, 54/48538

Int. Cl.³ G03B *1/00, 17/38*

U.S. Cl. 354—173 **6 Claims**



1. In a circuit for controlling a camera or a motor drive device by means of a control switch unit connected through a pair of connecting terminals thereof to a pair of remote control terminals of said camera or motor drive device: said control switch unit comprises;

(1) plural control switches and

(2) a voltage generating circuit adapted for generating plural different voltages in response to various combinations of the states of said control switches: and said camera or motor drive device comprises;

(3) plural voltage detecting circuits of different detecting voltages for detecting the voltages supplied to said remote control terminals, whereby said camera or motor drive device is controlled in response to the outputs from said voltage detecting circuits.

4,281,913

CAMERA CAPABLE OF COMMONLY USING STANDARD FILM AND 70 MM

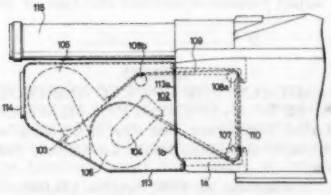
Tetsuji Shono, Kawagoe, and Takumi Kobayashi, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 16,698, Feb. 28, 1979. This application Jun. 2, 1980, Ser. No. 155,820

Claims priority, application Japan, Feb. 28, 1977, 52-22315

Int. Cl.³ G03B *17/00, 1/48, 17/26, 19/06*

U.S. Cl. 354—203 **9 Claims**



1. In a camera in which a 120 or 220 type film is loaded behind a picture plane by using a compatible film reel with a compatible film spool, mounting members and means for guiding and holding said 120 or 220 type film, and wherein the camera is not of the film back exchange type, the improvement comprising: said compatible film reel designed to be detachably mounted on said camera, said camera having an opening formed in the rear part of a reel accommodating chamber in said camera through which opening said compatible reel may be detached; said reel being contained entirely within said reel accommmodating chamber; said reel replaceable by a 70 mm

reel provided with mounting members for mounting a 70 mm film magazine outside said reel accommodating chamber, and means for guiding 70 mm film from said magazine into said reel accommodating chamber and holding it therein, said means for guiding configured to be detachably mounted on said camera; whereby said camera commonly uses 120 or 220 type film and 70 mm film.

4,281,914

FOCAL PLANE SHUTTER

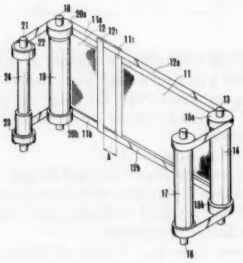
Nobuo Tezuka, Tokyo; Teiji Hashimoto, Kawasaki; Mitio Senuma, Tokyo, and Yutaka Iwata, Chichibu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,516

Claims priority, application Japan, Jan. 31, 1979, 54-10177; Jan. 31, 1979, 54-10919[U]

Int. Cl.³ G03B *9/34*

U.S. Cl. 354—244 **3 Claims**



1. A focal plane shutter comprising: shutter screens each having two ribbons; a take-up shaft for winding each of said ribbons; a first roller rotatable together with said take-up shaft for winding one of said two ribbons thereon, said first roller being provided with an extension part; and a second roller having said take-up shaft extending therethrough and arranged to wind the other of said two ribbons thereon, said second roller being provided with an extension part which is fitted into said extension part of said first roller with a frictional force being developed therebetween exceeding a predetermined degree of force, said second roller including an engaging part which is arranged to permit an external member to engage therewith, said second roller being arranged such that when said external member is engaged with said engaging part and is operated to apply a force greater than said frictional force, said second roller is rotated thereby relative to said first roller to adjust the amount of said other ribbon wound thereon and in turn to adjust parallelism between the ends of said shutter screens.

4,281,915

ARRANGEMENT FOR OPENING AND CLOSING A CLOSURE OF AN OPENING IN A FILM CASSETTE

Heinz Kröbel, Taufkirchen, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

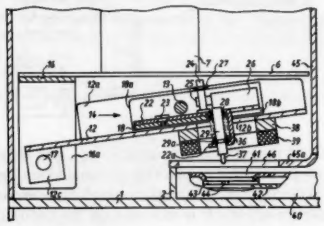
Filed Jul. 31, 1980, Ser. No. 174,026

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2934985

Int. Cl.³ G03B *17/26*; G11B *1/00*

U.S. Cl. 354—275 **22 Claims**

1. An arrangement for displacing a closure of an opening in a cassette accommodating photosensitive material in a predetermined path between closed and open positions thereof, particularly for use in a device for exposing an image onto the photosensitive material through the opening, comprising a support; an entraining member; means for mounting said entraining member for displacement along said predetermined path, including a mounting member and a carriage displaceable relative to the latter and carrying said entraining member; means for supporting said mounting member on said support for movement with said carriage and with said entraining member between a retracted and an extended position of the entraining member in which the latter respectively is spaced



from said path and extends into said path and engages the closure for entraining the same for displacement between the closed and open positions during the displacement of the carriage relative to said mounting member; means for moving said mounting member; and means for displacing said carriage.

4,281,916

INTERCHANGEABLE LENS ASSEMBLY FOR A CAMERA

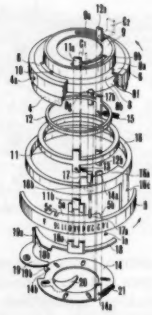
Masao Aoyagi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,430

Claims priority, application Japan, Mar. 15, 1979, 54-33526[U]

Int. Cl.³ G02B *7/02*; G03B *17/00*

U.S. Cl. 354—286 **14 Claims**



1. A support structure for the operation means of a diaphragm device of an interchangeable lens assembly for a camera including first component means held at a certain predetermined position with reference to said camera and second component means having lens operative components thereon and arranged so as to be rotatable relative to said first component means, comprising:

(a) a first part included in said operation means for transmitting driving power from said camera to said diaphragm device and a ring part in which the operation means is rotatably engaged relative to said first component means;

(b) said first component means being engaged in said ring part of said operation means and provided with a prevention part for preventing movement of said operation means along the direction of the optical axis of said lens assembly; and

(c) projections included in said first component means in

which the operation means is rotatably engaged for making contact with said ring part of said operation means.

4,281,917

INFORMATION DISPLAY DEVICE FOR CAMERA

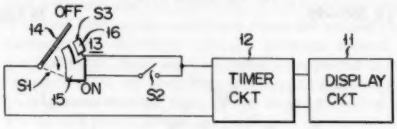
Masahiro Kitagawa, and Michiharu Saito, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 4, 1979, Ser. No. 35,981

Claims priority, application Japan, May 4, 1978, 53-53443

Int. Cl.[3] G03B *17/18*; G08B *1/08*

U.S. Cl. 354—289 **9 Claims**



1. In an information display device for a camera, comprising a power source, an information display circuit, a timer circuit, and switch means for causing said timer circuit to connect said information display circuit to said power source for a predetermined period of time, said switch means comprising a first switch which is turned on while being shifted from an OFF position to an ON position, a second switch which is operated independently of the first switch and which renders said information display circuit operable only when the first switch is in ON state, and a third switch which is ganged with the first switch, said third switch being temporarily turned on while the first switch is being shifted from the OFF position to the ON position and turned off when the first switch reaches the ON position, thereby causing said timer circuit to connect said information display circuit to said power source for a predetermined period of time.

4,281,918

ELECTROPHOTOGRAPHIC COPIER PERMITTING A TONER DISPENSING CASSETTE TO BE SUBSEQUENTLY EMPLOYED AS A RESIDUAL TONER RECEPTACLE

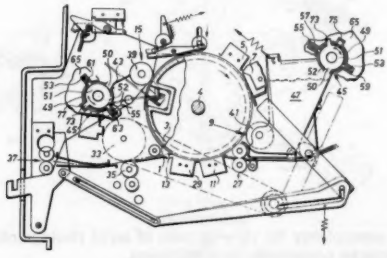
Hermann Fortmann, Bremen, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 64,525

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834508

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 R **6 Claims**



1. In a photocopier including a movable member carrying a photoconductive layer, a charging station for charging the layer, an illuminating station for photographically exposing the layer, a developing station provided with a magnetic brush and arranged to supply a magnetic single component toner to the brush for developing the image formed on the layer, a transfer station for transferring the developed image to a record material sheet, and a cleaning station for cleaning the layer, the stations being disposed in succession along the path of movement of the movable member for bringing each portion of the layer into operative association with each station in succession, in combination with a cassette containing a supply of such toner, the improvement wherein said developing station comprises means for receiving and holding said cassette in a position for dispensing toner for supply thereof to the magnetic brush, said cleaning station comprises means for receiving and holding said cassette in a position for collecting residual toner removed from the photoconductive layer in said cleaning station, whereby one and the same cassette can be used to initially supply toner to said developing station and, after having been emptied, can serve as a receptacle for residual toner in said cleaning station, said cassette has an open state in which a flow passage is present between its interior and the region outside of said cassette and a closed state in which its interior is closed, and said means at said developing and cleaning stations are constructed for permitting said cassette to be inserted in or removed from each said station only when in its closed state.

4,281,919

COPYING APPARATUS PROVIDED WITH AN AUTOMATIC ORIGINAL FEEDING DEVICE

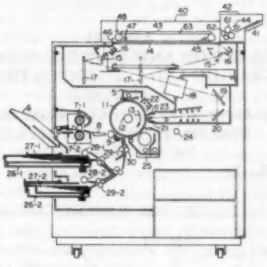
Akihiro Nomura, Kawasaki; Kimiaki Hayakawa, Tokyo; Shigeru Yoshimura, Yokohama; Shunichi Masuda, Tokyo; Katsuichi Shimizu, Hoya, and Toshiaki Yagasaki, Hino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,779

Claims priority, application Japan, Oct. 14, 1978, 53-126706; Oct. 14, 1978, 53-126742; Oct. 14, 1978, 53-126744

Int. Cl.[3] G03B *27/48, 27/50*

U.S. Cl. 355—50 **30 Claims**



1. A copying apparatus comprising:

(a) original feeding means for feeding an original document to an exposure position, and for discharging the original document from the exposure position after exposure;

(b) image formation means for forming an image corresponding to the image of said original document;

(c) start instruction means for initiating operation of said original feeding means;

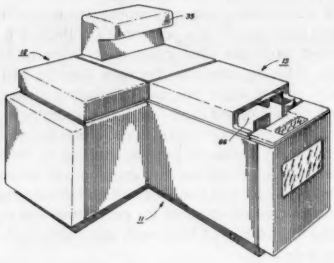
(d) detector means for detecting the presence of the original document at said exposure position; and

(e) control means responsive to an output of said detector means, when said original feeding means is operating in response to said instruction means, for controlling said image formation means to produce a predetermined number of copies of said original document and for controlling said original feeding means to discharge the original document upon completion of said copies.

4,281,920
STAPLER ARRANGEMENT FOR A COPIER/FINISHER

Thomas R. Cross, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,333
Int. Cl.[3] G03B *27/62*
U.S. Cl. 355—75 6 Claims



1. In an electrostatographic reproduction system having a document handling apparatus for advancing individual document sheets from a stack to an exposure station and an electrostatographic processor for processing copy sheets, the improvement comprising:

means for compiling copy sheets into sets preparatory to attaching thereof,

copy sheet attaching apparatus arranged to apply a fixing element to a corner of a complied set wherein said element has leg portions driven through the sheets and a bridge portion from which the legs extend,

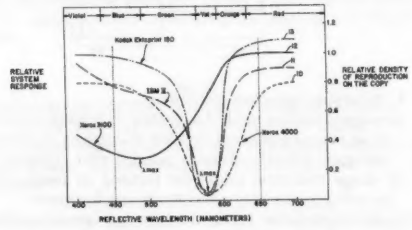
said applying of the fixing element to said corner being such that the bridge element is at an acute angle relative to each edge of said corner,

said bridge element of the staple is positioned to be approximately perpendicular to the diagonal of the corners of the sheets.

4,281,921
PLURAL COLOR ANTI-COPYING SYSTEMS FOR XEROGRAPHIC AND ELECTROSTATIC COPYING MACHINES

John A. Van Auken, 16 La Gorce Cir., Miami Beach, Fla. 33141

Filed Sep. 17, 1979, Ser. No. 76,225
Int. Cl.[3] G03B *27/32*
U.S. Cl. 355—77 16 Claims

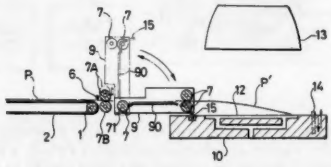


1. An anti-copying method of preparing an original, image-bearing paper document to inhibit or prevent intelligible reproduction of the image on the original document with xerographic and electrostatic copying machines, comprising the steps of providing said document with a yellow background, printing a first pre-selected portion of said image on said background in a first pre-selected color having a dominant wavelength which is greater than that of said yellow background, and printing the remainder of said image in a second pre-selected color having a dominant wavelength which is less than that of said yellow background.

4,281,922
PLATE FEEDING APPARATUS FOR PRINTING APPARATUS

Nobuo Matsumoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 7, 1979, Ser. No. 91,926
Claims priority, application Japan, Nov. 14, 1978, 53/156366[U]; Dec. 11, 1978, 53/170659[U]; Jan. 5, 1979, 54/753[U]
Int. Cl.[3] G03B *27/04*
U.S. Cl. 355—99 18 Claims

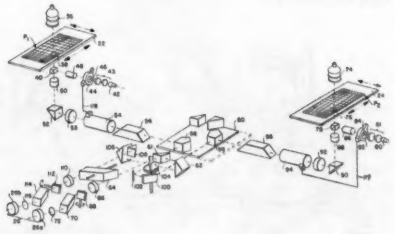


1. A plate feeding apparatus for feeding printing plates to a printing apparatus one after another in synchronization with the operation of the printing apparatus comprising feeding-out means engageable with the printing apparatus while a printing plate is being transferred from the feeding-out means to the printing apparatus and disengageable therefrom during printing of said printing plate, a front-end stopper means projectable from a base plate during feeding of said printing plate and retractable into said base plate during printing of said printing plate, and rear-end guide means provided at an end of the feeding-out means adapted to be received in an aperture in said base plate.

4,281,923
INTERCONNECTED, ADJUSTABLE ZOOM LENS AND RETICLE UTILIZED IN LENS SYSTEMS FOR STEREOPLOTTER

S. Jack Friedman, Alexandria, Va., assignor to O.M.I. Corporation of America, Alexandria, Va.

Filed May 4, 1979, Ser. No. 36,013
Int. Cl.[3] G01C *11/12*
U.S. Cl. 356—2 5 Claims



1. A stereoplotter for viewing pairs of aerial photographic transparencies comprising, in combination,

(a) a binocular viewer,

(b) a first photocarriage for supporting the first one of a pair of panoramic photographic transparencies having inherent distortions,

(c) means for translating said first photocarriages along a first and a second axis,

(d) a second photocarriage for supporting the second one of

a pair of panoramic aerial photographic transparencies having inherent distortions,

(e) means for translating said second photocarriage along in a first and a second axis, said axes being parallel to the axes within which said first photocarriage is translated,

(f) a first light source positioned above the first photocarriage to illuminate selected portions thereof and project images from the transparency supported thereon,

(g) first means for producing a first reference mark and projecting same into the plane of the images projected from the first photocarriage,

(h) a first lens system including a first zoom lens for transferring the combined image of the first transparency and the first reference mark to one ocular of the binocular viewer,

(i) a second light source positioned above the second photocarriages to illuminate selected portions thereof and project images from the transparency supported thereon,

(j) second means for producing a reference mark and projecting same into the plane of the image projected from the second photocarriage,

(k) a second lens system including a second zoom lens for transferring the combined image of the second transparency and the second reference mark to the other ocular of the binocular viewer,

(l) the improvement comprising:

(1) first interconnecting means for joining said zoom lens in said first lens system to said first means for producing a first reference mark in an inverse relationship so that as the power of the zoom lens is increased the size of the first reference mark is diminished proportionately, and

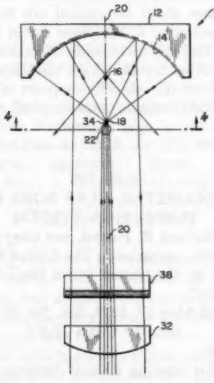
(2) second interconnecting means for joining said zoom lens in said second lens system to said second means for producing a second reference mark in an inverse relationship so that as the power of the zoom lens is increased the size of the second reference mark is diminished proportionately, whereby the pair of reference marks seen through the binocular viewer can be fused to provide a unitary reference point.

4,281,924

REFLECTOR FOR THE LASER BEAM OF A PARTICLE ANALYZER

Robert E. Auer, South Miami, and Wallace H. Coulter, Miami Springs, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jan. 24, 1979, Ser. No. 6,011
Int. Cl.³ G01N *21/49, 21/64*
U.S. Cl. 356—73 **10 Claims**



1. In an apparatus for analyzing particles suspended in a liquid of the type having means for providing a substantially cylindrical stream of the liquid and means for impinging the stream with a beam of illuminating radiation to create detectable signals from the particles, the improvement comprising:

a reflector having a concave reflector surface with an optical axis and a center of curvature;

said concave reflector surface being arranged to have said optical axis disposed in intersecting relationship with the stream of liquid and to have the beam of illuminating radiation positioned on said optical axis;

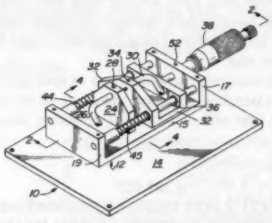
said concave reflector surface being arranged to have said center of curvature positioned substantially at a focus of the stream of liquid, whereby the stream of liquid defines a cylindrical lens having the focus.

4,281,925

FIBER OPTIC ATTENUATION SIMULATOR

John W. Forrest, West Acton, and Robert D. Livingstone, Townsend, both of Mass., assignors to Bowmar/Ali, Inc., Acton, Mass.

Filed Jul. 31, 1979, Ser. No. 62,594
Int. Cl.³ G01N *21/84*
U.S. Cl. 356—73.1 **6 Claims**



1. Apparatus for simulating attenuation in a fiber optic cable of significant length, comprising:

first and second foreshortened fiber optic cables, each having one end adapted to be connected to a proximate device for measuring light transmission through said cables and the apparatus, the other end of each of said cables being supported within said apparatus in opposed coaxial relationship along a common optical axis so that light can pass from one cable to the other,

support means for axially positioning said other ends of said cables within the apparatus, said support means comprising a first support for the other end of said first cable and a second support for the other end of said second cable,

at least one of said first and second supports being a carriage displaceable relative to the other support for adjusting the distance between said other ends of said cables while maintaining them in optical coaxial relation to each other,

means for precisely and repeatably controlling the distance between said other ends, and

an enclosure for excluding ambient light from the area adjacent said other ends of the first and second cables.

4,281,926

METHOD AND MEANS FOR ANALYZING SPHERO-CYLINDRICAL OPTICAL SYSTEMS

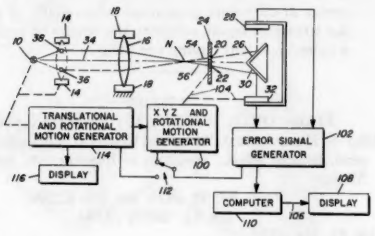
Tom N. Cornsweet, Mission Viejo, Calif., assignor to Rodenstock Instruments Corp.

Filed Jul. 3, 1978, Ser. No. 921,503
Int. Cl.³ G01B *9/00*
U.S. Cl. 356—124 **23 Claims**

1. In a lens meter:

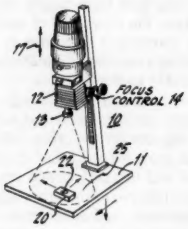
(a) first and second spaced light detector means, each comprising a light detector having a plurality of light sensitive areas arranged side by side and capable of detecting presence of a light beam, for providing position signals indicating which areas of the light detector are subjected to a light beam;

(b) a single point light source;
(c) means for directing at least two light beams derived from said light source such that each beam is directed at a respectively associated one of said first and second light detection means;
(d) means for interposing a lens to be tested between said light source and said means for directing two light beams



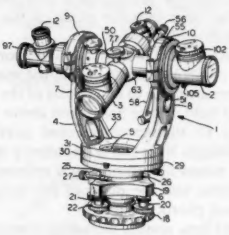
derived from said light source such that said two light beams will have passed through different regions of the lens to be tested before being directed at said light detection means; and
(e) means for recognizing when each of said light beams lies on a line extending between the areas of its respectively associated first and second light detection means.

4,281,927
APPARATUS FOR INDICATING MAXIMUM RESOLUTION FOR PROJECTED IMAGES
Louis Dzuban, 384 Jeffries St., Perth Amboy, N.J. 08861
Filed Aug. 27, 1979, Ser. No. 69,627
Int. Cl.³ G03B *27/34*
U.S. Cl. 356—124 **7 Claims**



1. Apparatus for providing an indication of maximum resolution indicative of an optimum focusing position for a photographic apparatus of the type operative to respond to an image located at a given plane from said photographic apparatus, comprising:
(a) a single photocell located at said plane and positioned to intercept a portion of said image,
(b) an opaque disc having a single radial slot therein with said slot being substantially smaller in area than half the area of said disc, and positioned in contact with said photocell to expose a predetermined portion of the surface of said cell to said image,
(c) means coupled to said disc for rotating the same,
(d) means coupled to the output of said photocell and responsive solely to high frequency components emanating therefrom during rotation of said disc, to provide a signal indicative of the amplitude of said components whereby a maximum amplitude indicates maximum resolution.

4,281,928
OPTICAL TRANSIT SQUARE WITH FOCUSABLE CROSSING TELESCOPES
Amber N. Brunson, Kansas City, Mo., assignor to Brunson Instrument Company, Kansas City, Mo.
Filed Dec. 3, 1979, Ser. No. 99,616
Int. Cl.³ G01C *1/00*
U.S. Cl. 356—140 **11 Claims**

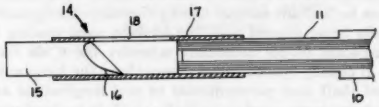


1. A precision optical transit square instrument for accurately determining lines and planes respectively perpendicular to reference lines and planes and comprising:
(a) a support;
(b) a standard having spaced arms and rotatably mounted on said support and having an axis of rotation;
(c) a main telescope having a barrel with an optical axis and with aligned lenses therein for focusing upon objects in a line of sight thereof and positioned at different distances from said barrel;
(d) bearings in said spaced arms and rotatably supporting trunnions receiving said main telescope and forming a mounting therefor for rotation about the optical axis of said main telescope, said main telescope being rotatable with said standard about the axis of rotation thereof to sweep a plane perpendicular to the axis of rotation of said standard and focusable upon objects therein; and
(e) a cross telescope having a barrel with an optical axis and with aligned lenses therein for focusing upon objects in a line of sight thereof;
(f) said cross telescope extending transversely between said arms and mounted perpendicularly to said main telescope with the respective optical axes thereof in intersecting relation at a point in line with the axis of rotation of said standard;
(g) said cross telescope being movable with rotation of the main telescope about the optical axis thereof to sweep a plane perpendicular to the plane swept by the main telescope with the axis of rotation of said standard being in said plane swept by the cross telescope, sweep a cone emanating from the intersection point of said optical axes and the axis of rotation of said standard and to focus upon objects in a line of sight thereof.

4,281,929
SMALL DIAMETER, DEEP BORE OPTICAL INSPECTION SYSTEM
David E. Lord; Richard R. Petrini, and Gary W. Carter, all of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed May 17, 1979, Ser. No. 39,985
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—241 **11 Claims**

1. Apparatus for viewing a small diameter, deep bore with minimal optical distortion comprising: a small-diameter rod optic system having a rod lens, a curved mirror having a single inclined convex surface and a diameter approximately equal to that of the rod optic system, said inclined convex surface extending at an angle to the longitudinal axis of the rod lens,

and means having a slot therein adjacent said curved mirror for mounting the curved mirror in spaced relationship to the rod



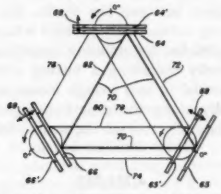
lens and at an end of the rod lens which is located at one end of the rod optic system so that light traveling through the rod optic system is bent about an angle of 90° by the curved mirror.

4,281,930

LASER GYRO WITH PHASED DITHERED MIRRORS

Thomas J. Hutchings, Thousand Oaks, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 18, 1978, Ser. No. 970,603
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **15 Claims**



1. A ring laser comprising:

means forming a closed loop optical cavity containing an active lasing medium for generating primary counter-rotating laser light beams therein, the frequency difference between the light beams having a measure of the rate of rotation experienced by the ring laser, said cavity forming means including a plurality of mirrors for reflecting said light beams; and

means for vibrating each of said mirrors in translation at the same frequency in a direction only perpendicular to the surface of the mirror with each said mirror being vibrated at a phase difference with respect to each adjacent mirror substantially equal to 360° divided by the number of mirrors.

4,281,931

MEASURING APPARATUS COMPRISING LIGHT OPTICS UTILIZING CYLINDRICAL FOCUSING GLASS FIBER

Toshio Chikama, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Dec. 11, 1978, Ser. No. 968,025
Claims priority, application Japan, Dec. 21, 1977, 52/171115[U]; Nov. 2, 1978, 53/151380[U]; Nov. 2, 1978, 53/151381[U]
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—372 **23 Claims**

1. A measuring apparatus for remotely measuring the size of an object on a surface and/or the distance of said apparatus from said object, said apparatus comprising

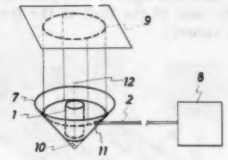
a rod lens comprising a generally cylindrical focusing glass fiber having an axis,

a non-diffusive light beam and a light guide means for carrying said light beam to said rod lens to intersect with the radial side of said focusing glass fiber radially scattering said light beam,

said radially scattered light beam impinging on said surface to form a visible light on said surface,

a housing containing said rod lens located at the distal end thereof toward said object,

viewing means to view said visible light and said object for said measuring wherein the axis of said rod lens is oriented



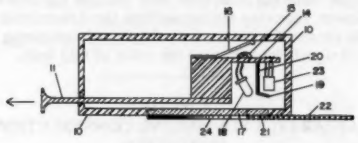
substantially orthogonal to said surface, further comprising optical means optically coupled to said rod lens, wherein said optical means forms a circle of light, said visible light comprising said circle of light.

4,281,932

LIGHT ABSORPTIVITY MEASURING DEVICE

Thomas A. Young, Box 1018, Oak Hill, W. Va. 25901

Filed Jun. 14, 1979, Ser. No. 48,658
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—416 **3 Claims**



1. A device for measuring the light absorptivity characteristics of a medium over some substantially continuous range, comprising one or more absorptivity measuring devices, each consisting of a light source-sensor, a means for limiting the range of color response, a means for storing the sensor output representative of the medium under test, a reference consisting of a medium unidirectionally varying in absorptivity, a comparator to indicate equality of the sensor output representative of said reference and that output stored by said storing means, and a means for moving said light source-sensor combination over the medium under test and then over said reference medium using the same color range, the position on said reference medium relative to the light source-sensor combination when said comparator indicates equality being the measure of the absorptivity of said medium under test.

4,281,933

APPARATUS FOR SORTING FRUIT ACCORDING TO COLOR

Robert K. Houston, Santa Clara, and James Meador, Simi Valley, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 21, 1980, Ser. No. 113,908
Int. Cl.³ G01N *21/27*
U.S. Cl. 356—425 **7 Claims**

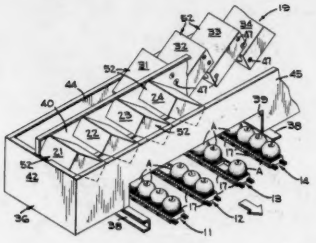
1. Apparatus for sorting fruit according to color, comprising:

a conveyor for moving the fruit down a path in single file;

means for viewing the fruit to determine the color thereof comprising an upstream viewer and a downstream viewer, said viewers being positioned adjacent to said path with the upstream viewer being positioned on one side of the path and with the downstream viewer being positioned on the other side of the path, said viewers being spaced in the direction of movement of said conveyor along said path so

that the upstream viewer observes a first side of an individual fruit at an earlier time than the downstream viewer observes the opposite side of the same fruit;

at least one light source positioned to illuminate said first side of the fruit as the fruit passes by the upstream viewer and at least one light source positioned to illuminate the opposite side of the fruit as the fruit passes the downstream viewer;



photosensor means in each viewer for receiving light reflected from one side of an individual fruit as said fruit passes in front of each viewer and for providing an output signal indicative of the color of said fruit, and

control means for receiving the signal from the upstream viewer when it is viewing said individual fruit, storing said signal until the individual fruit reaches the downstream viewer, receiving the signal from the downstream one of the viewers for said individual fruit and comparing both of said signals to determine the color of said fruit.

4,281,934

APPARATUS FOR MIXING CONSTRUCTION MATERIALS

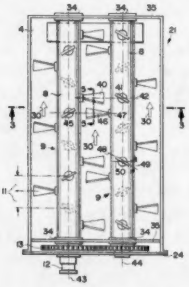
Ulrich Krause, Prinz Christianweg 13, and Peter Krause, Park Rosenhoehe 4, both of 6100 Darmstadt, Fed. Rep. of Germany

Filed Aug. 29, 1979, Ser. No. 70,875

Claims priority, application Austria, Sep. 12, 1978, 6571/78

Int. Cl.³ B28C *5/14, 7/06;* **B01F** *7/04, 15/02*

U.S. Cl. 366—30 **7 Claims**



1. An apparatus for mixing construction materials and for placing the resulting mixture on a surface, comprising mixing trough means having an inlet for the construction material and a discharge end for the mixture, supply means arranged for supplying said construction materials into the inlet of said mixing trough means, first and second mixing tools supported for rotation about first and second side-by-side parallel longitudinal rotational axes in said mixing trough means for mixing and simultaneously transporting the materials from said inlet to said discharge ends, each mixing tool comprising a shaft mounted along one of said longitudinal, rotational axes and a plurality of mixing blades operatively secured to each shaft in helical succession with a 90° circumferential staggering from blade to blade on the same shaft, whereby the blades form four in line rows of blades on each shaft, each blade having an axis extending radially relative to the respective longitudinal, rotational shaft axis, said blades being mounted with a uniform axial spacing between adjacent blades along both shafts, all the blades on both shafts further having the same configuration, said shafts being aligned with the uniform axial spacing between adjacent blades coinciding whereby the blade radial axes lie in equally spaced radial planes along the longitudinal rotational shaft axes perpendicular to said longitudinal axis, each blade being mounted on its shaft at a blade angle of attack relative to the respective radial plane, said two shafts being adjusted in their rotational angular position relative to each other so that any two blades on different shafts enclose a right angle between their respective radial axes at each quarter turn of the shafts when these radial axes are located in a common radial plane and so that said first and second shafts comprise a plurality of meshing blade pairs, each meshing pair comprising one blade from each shaft axially spaced from each other in next adjacent radial planes along said longitudinal rotational axes, said shafts being constructed and arranged for rotation in opposite directions with the blades moving upward from the center line between said axes and with the blades of each meshing pair overlapping the major portion of the area of said blades in the space between the shafts, the blades of each meshing pair being substantially parallel when the radial axes of said meshing blades are pointing toward and away from each other, thereby imparting a mixing shearing action to construction material in said trough means and moving said material upwardly along the zone between the mixing tool shafts and then laterally toward the walls of the trough.

4,281,935

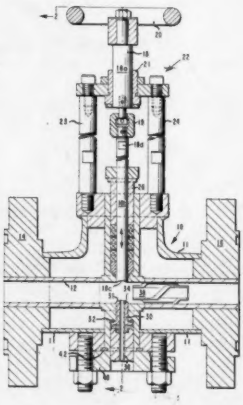
ADDITIVE INJECTION VALVE

Gregory D. Cramer; Irvin B. King; Robert D. Sauerbrunn, all of Seaford, and Albert T. Strand, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 25, 1980, Ser. No. 115,214

Int. Cl.³ F16K *1/02*

U.S. Cl. 366—174 **6 Claims**



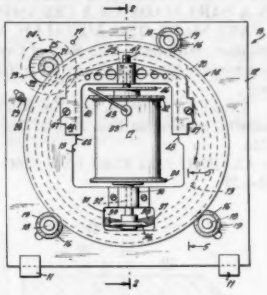
1. A valve for adding ingredients to or sampling the fluid flowing through the valve comprising: a body member having a fluid flow path therethrough from an inlet end to an outlet end; a valve stem connected to the body and movable through said flow path to engage a valve seat located directly opposite said valve stem in said body member, said valve seat having an upper surface exposed to said flow path, said seat having a passage therethrough extending from said upper surface; and removable tubing closely fitting in said passage extending from said upper surface to a location outside said body member.

4,281,936

PAINT MIXING AND CONDITIONING MACHINE

Richard D. Schotter, Glenwood, and Robert P. Heinis, Totowa, both of N.J., assignors to Red Devil, Inc., Union, N.J.

Filed Nov. 13, 1979, Ser. No. 93,591
Int. Cl.³ B01F 9/00
U.S. Cl. 366—209 **6 Claims**



1. A paint mixing and conditioning machine comprising in combination:
(a) a base support;
(b) an upstanding support plate having an aperture therein secured to the base support;
(c) a plurality of spaced resilient wheels journaled in the upstanding support and extending outwardly therefrom;
(d) a pulley-shaped circular disc having a window therein in register with the support plate aperture, said disc being peripherally and rotatably carried by the spaced resilient wheels;
(e) a source of rotary power carried by the support plate;
(f) a resilient drive wheel secured to the power source and in frictional contact with the pulley-shaped circular disc;
(g) A first clamping plate to receive the bottom of the container for the paint;
(h) a second clamping plate to secure the said container against the first clamping plate; said first and second clamping plates being disposed normal to the support plate and the pulley shaped disc and extending through the aperture and window therein;
(i) means to urge the second clamping plate in the direction of the first clamping plate;
(j) a resilient friction drive wheel freely carried by the pulley shaped disc adjacent the first clamping plate in contact with the support plate;
(k) a shaft secured at one end to the drive wheel and at its opposite end to the first clamping plate; and
(l) a stud carried by the clamping means, freely supporting the second clamping plate to permit rotational movement of the container.

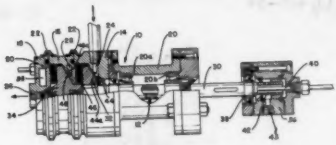
4,281,937

MIXER

Joseph E. Ferri, Shillington; Allan A. Gundersen, Sinking Spring, and Oliver N. Seelig, Reading, all of Pa., assignors to SKG Industries, Inc., West Lawn, Pa.

Filed Jun. 1, 1979, Ser. No. 44,458
Int. Cl.³ B01F 7/00
U.S. Cl. 366—303 **19 Claims**

1. A mixing head comprising: a stator,
a rotor mounted for rotation with respect to the stator;
the stator and rotor defining therebetween a fluid flow path;
means defining an inlet to the fluid flow path and means defining an outlet from the fluid flow path;
the fluid flow path including a first shearing zone defined between a portion of the rotor and the stator and a second shearing zone, positioned longitudinally and downstream from the first shearing zone and defined between the stator and the rotor;
the fluid flow path including also an intermediate zone extending from the first to the second shearing zone and



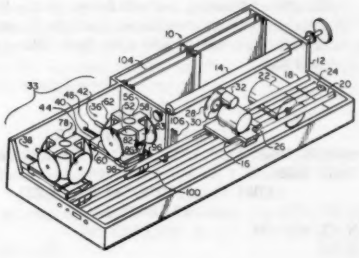
opening into the second shearing zone, the intermediate zone being defined by the stator and a surface of the rotor extending between the first and second shearing zones, and disposed at an acute angle with respect to the axis of rotation of the rotor.

4,281,938

AUTOMATIC PRINT WHEEL ELEMENT CHANGING MECHANISM FOR A SERIAL PRINTER

Stephen R. Phillips, 120 El Dorado Rd., Walnut Creek, Calif. 94595

Filed Jan. 14, 1980, Ser. No. 112,043
Int. Cl.³ B41J 3/54
U.S. Cl. 400—171 **16 Claims**



1. A print element interchange mechanism for use on a serial printer of the type having a rotary print element mounted on a carriage assembly which moves along a printing track parallel to a platen on which a printing medium is advanced, said track having a printing portion and at least one exchange position, the interchange mechanism comprising:
at least one changer assembly mounted for movement along an interchange track which is generally orthogonal to said printing track, said interchange track having a load position adjacent to said exchange position on said printing track and a retracted position remote from said exchange position;
a print element storage carousel mounted for rotation on said changer assembly and having a plurality of arms each ofwhich is adapted to hold a different print element;
means for directly transferring a print element between said carriage assembly and said carousel wherein said print element is simultaneously engaged by one of said carousel arms and by said carriage assembly when said carriage assembly is in said exchange position and said changer assembly is in said load position whereby when either one of said carriage assembly or said changer assembly moves along its respective track, said print element is retained by the moving assembly.

4,281,939
MECHANICAL PENCIL

Yoshihide Mitsuya, 1-4-106, Nagata 3-chome, Jyotoh-ku, Osaka-shi, Japan

Filed Jun. 4, 1979, Ser. No. 45,262
Int. Cl.[3] B43K *21/22, 21/16*
U.S. Cl. 401—54 1 Claim

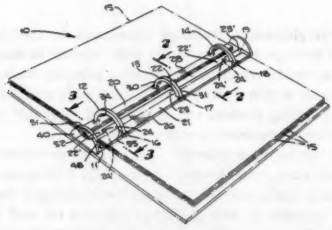
1. A mechanical pencil having a lead protective device, said pencil comprising: a pencil body; a lead insertion tube on the forward end of said pencil body and having a substantially uniform inner diameter; a thin film of an elastic material, such as rubber, synthetic resin or the like, on the inner surface of said lead insertion tube, the portion of the thin elastic film on the forward end of the tube having a greater thickness than the thickness of the film on the remainder of said tube for frictionally engaging a lead for preventing it from falling out of said insertion tube; and

a lead guide integral with said film at the rear end of said tube and projecting out of said tube and having a rearwardly diverging funnel shaped hole opening into the interior of the remainder of said film, the material of said lead guide extending forwardly over the outer surface of said tube and having a check flange on the forward end thereof around the outside of said tube functioning as a check for preventing said tube from falling out of the pencil body.

4,281,940
LOOSE-LEAF BINDER

Gwang H. Rhee, 6700 Seville Ave. , #909, Huntington Park, Calif. 90255

Filed Aug. 8, 1979, Ser. No. 64,727
Int. Cl.[3] B42F *13/22*
U.S. Cl. 402—38 13 Claims

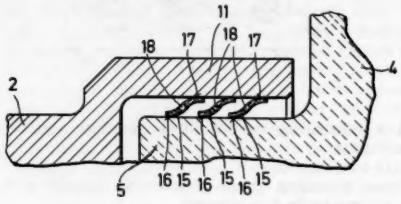


1. A loose-leaf binder for sheets which are provided with a plurality of holes adjacent one edge, said binder comprising a back member on which is mounted a plurality of separable ring assemblies in spaced relationship for retention of said sheets, said back member comprising a pair of separate parallel composite hinge leaves with a pivotal connection interconnecting said hinge leaves at adjacent edges, and a releasable interlock between said hinge leaves comprising a flange on each of the leaves, said flanges being of relatively thin flat sheet material and of substantially uniform thickness, said flanges being laterally yieldable and having an overlying relationship with a shoulder on one flange and a shoulder on the other flange being in abutting engagement when the hinge leaves and ring assemblies are interlocked, at least one of said flanges having a lateral resilient displacement relative to the other whereby to disengage said shoulders and enable movement of said flanges in planes parallel to each other to effect separation of said ring assemblies for removal and replacement of said sheets.

4,281,941
DEVICE FOR HIGH THERMAL STRESS CONNECTION BETWEEN A PART MADE OF A CERAMIC MATERIAL AND A PART MADE OF A METALLIC MATERIAL

Paul Rottenkolber, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 16, 1979, Ser. No. 85,271
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845716
Int. Cl.[3] F16C *9/00;* F16D *1/00;* F16G *11/00*
U.S. Cl. 403—29 14 Claims

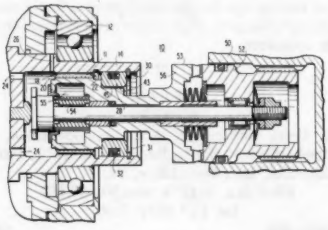


1. In a high thermal stress connection between an essentially rotationally symmetrical component made of ceramic material and a component made of metallic material in which the components are connected by means of high temperature soldering, the improvement wherein a connecting part is provided which connects said ceramic component to said metallic component, and which said connecting part is elastic and radially and axially resilient so that stresses produced by differential expansion of said ceramic component and said metallic component during soldering are substantially absorbed by elastic deformation of said connecting part.

4,281,942
LUBRICATION SYSTEM FOR HIGH SPEED SPLINE CONNECTION AND BEARING

Fred J. Gaeckle, and John L. Butterfield, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.

Filed Nov. 13, 1978, Ser. No. 959,851
Int. Cl.[3] F16C *11/00;* F16D *1/12, 3/00*
U.S. Cl. 403—38 6 Claims



1. A spline and bearing lubrication system for use in high speed aircraft generator drive systems having:

a stub shaft having external splines for transmitting power,

a power receiving internally splined tube having a splined portion and a smooth portion,

a bearing located around said power receiving internally splined tube,

a splined connection formed by the stub shaft external spline and the power receiving internally splined tube, said connection having first and second ends,

a source of high pressure engine lubricating oil which is supplied to said first end of said splined connection, the improvement comprising:

a lubrication hole connecting said first side of said splined connection to said generator bearing for supplying said engine lubricating oil to said generator bearing and

means located at said second end of said splined connection and secured to said power receiving splined tube for retarding the flow of said oil across said splined connection, for forcing a portion of said oil into said lubrication hole and for preventing fretting or corrosion of said splined connection.

4,281,943

METHOD AND DEVICE FOR ANCHORING RODS OF INSULATING MATERIAL IN ATTACHMENT FITTING

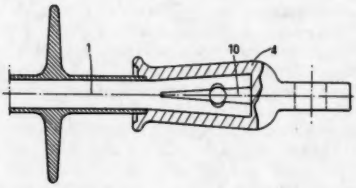
Pierre Viennot, 32, rue des Garrements, 92140 Clamart, France

Filed May 28, 1980, Ser. No. 154,014

Claims priority, application France, Jun. 15, 1979, 79 15432

Int. Cl.³ F16B *11/00, 13/04*

U.S. Cl. 403—267 **9 Claims**



1. A method of fixing an insulting rod in a metal attachment fitting, in which the insulating rod has a segmented end traversed by a hole, the attachment fitting having an inwardly flaring internal cavity and a blind hole extending across the cavity, and a fastening member having a channel therethrough and a frustoconical tip and being adapted to be received in the blind hole; said method comprising the steps of:

(a) inserting the segmented end of the rod into the internal cavity of the attachment fitting;

(b) inserting the fastening member into the blind hole in the attachment fitting and through the hole traversing the rod end, the frustoconical tip of the fastening member spreading the rod segments apart and into contact along large wall portions of the internal cavity of the attachment fitting;

(c) applying a vacuum to the internal cavity;

(d) filling the cavity with a resin through the channel in the fastening member, the resin being of high strength, non-shrinking and having a coefficient of expansion identical to that of the metal of the attachment fitting;

(e) permitting the resin to polymerize which thereby forms a rigid block with the rod fast with the attachment fitting, the undercut of the internal cavity of the attachment fitting preventing extraction of the rod even against the application of the high traction forces; and

(f) after polymerization of the resin, severing the end of the fastening member flush with the attachment fitting.

4,281,944

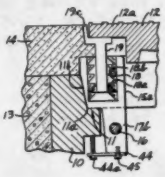
MANHOLE COVER SUPPORT

Harold M. Bowman, 18867 N. Valley Dr., Fairview Park, Ohio 44126

Filed Sep. 10, 1979, Ser. No. 73,910

Int. Cl.³ E01D *7/00*

U.S. Cl. 404—26 **9 Claims**



1. A sectional manhole cover support for vertically adjusting the level of a manhole cover in the opening of a manhole housing to a new road grade, wherein said manhole housing has at its upper edge an arcuate recess opening upwardly and also radially inwardly; each section of said support comprising generally arcuate base members adapted to be fixed within said opening against vertical movement downwardly in use thereof; said members comprising a plurality of arcuate base members collectively substantially forming a ring with an upper horizontal linear surface for supporting said manhole cover at a raised level; each of said base members having an integral downwardly extending post near each end thereof; each of said posts having respectively right-hand and left-hand threads in adjacent ends of each pair of base members; whereby coacting adjustable threaded bolt means may be affixed between adjacent posts for moving the sections of said base member circumferentially apart to expand said base member within said opening of said manhole housing to tightly engage said housing.

4,281,945

ROLLER ASSEMBLY FOR REFUSE CRUSHERS

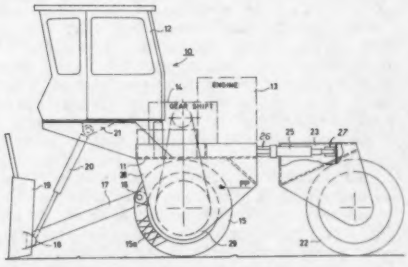
Matti S. Sinkkonen, 40950 Muurame Kp 1, Finland

Filed Aug. 23, 1979, Ser. No. 69,165

Claims priority, application Finland, Aug. 25, 1978, 782616

Int. Cl.³ E01C *19/26*

U.S. Cl. 404—121 **9 Claims**



1. A roller assembly, particularly for use in a refuse crusher or the like, comprising:

a roller element having an axis of rotation and two axial end faces, and a substantially cylindrical surface extending between said end faces having refuse crushing means provided thereon;

means for supporting said roller element for rotation about said axis, said supporting means including at least one surface in opposing relationship to and spaced outwardly from a corresponding one of said roller element end faces

to define a space therebetween contiguous with said corresponding one of said roller element end faces; and

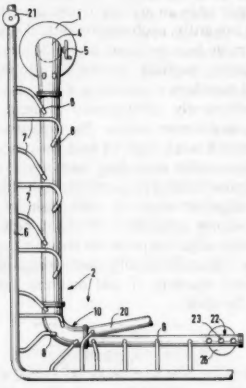
cooperating means provided on said at least one surface and said corresponding roller end face for crushing refuse which enters into said space therebetween.

4,281,946

PNEUMATIC CONVEYANCE DEVICE AND CONVEYING METHOD EMPLOYING PERCOLATION OF GAS INTO FLOWABLE BULK MATERIAL IN A FEED PIPE

Andras Kanics, Laasphe, Fed. Rep. of Germany, assignor to Bühler-Miag, Braunschweig and Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

Continuation of Ser. No. 862,497, Dec. 20, 1977, abandoned.
This application Oct. 26, 1979, Ser. No. 88,486
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1976, 2657677
Int. Cl.³ B65G *53/06*
U.S. Cl. 406—95 **23 Claims**



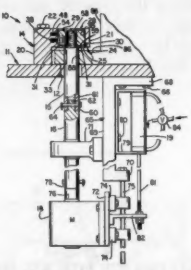
8. In a feed pipe for the pneumatic conveyance of flowable bulk material, viscous substances, sludges and other like products, the improvement comprised in that said feed pipe is constructed as an elongated single chamber which has an undivided cross section, said feed pipe having at least one outlet, product supply means connected to an inlet of said feed pipe for filling the feed pipe over its entire cross section with said product, said product being fed to said inlet by the force of gravity from said product supply means located thereabove, said feed pipe being horizontal or somewhat upwardly sloped from said product inlet to said outlet, gas supply means connected over the length of said feed pipe for permeating the product therein beyond its capacity with gas and therewith expanding the volume occupied by a unit weight of said product in a progressively increasing manner along the length of said feed pipe from said product inlet to said outlet with a corresponding decreasing in product angle of repose until the entire feed pipe is filled with said product, said gas supply means including a gas supply line and a low pressure gas source and a plurality of similar percolation inlets distributed over the length of said feed pipe and which point into the lower area of said feed pipe, said percolation inlets each being connected to said gas supply line and said low pressure gas source, said product supply means and said feed pipe being free of gas inlets in addition to said percolation inlets, the pressure level of said gas source and the size of said percolator inlets being dimensioned such that through said percolation inlets gas is continuously supplied to said feed pipe slowly and without turbulence in such quantity that said product undergoes said permeation beyond its capacity with said gas and said expansion in volume occupied by a unit weight of product progressively along the length of said feed pipe, said percolation inlets including means adjacent the feed pipe for blocking entry of product into said gas line while admitting said gas to said feed pipe.

4,281,947

SPOT FACE CUTTER

J. Taylor Marlowe, Rte. 3, Box 303, Ringgold, Ga. 30736

Filed Dec. 31, 1979, Ser. No. 108,687
Int. Cl.³ B23B *35/00, 39/00, 41/00*
U.S. Cl. 408—1 R **6 Claims**



1. A spot facing tool for connection to a work table defining an opening therethrough, said tool including a reversible motor with a drive shaft, an arbor connected to said motor drive shaft for rotation about its longitudinal axis, support means movably supporting said arbor beneath the table in alignment with the opening of the table, means for moving said arbor vertically through the opening of the work table, a cutter holder mounted on the upper surface of the work table and including a cutter receptacle positioned in spaced relationship over the upper surface of the work table and over the opening of the work table and in alignment with said arbor, a cutter sized and shaped to be received in said cutter receptacle and normally rotatably received in said cutter receptacle and movable between a position where it is received in said receptacle and to a lower position closer to the upper surface of the work table, said cutter and said cutter holder including means for releaseably maintaining said cutter in said receptacle, said arbor and said cutter including connector means for releasably connecting together said arbor and said cutter, whereby a work piece defining a hole therein is moved between the cutter receptacle and the work table with the hole in the work piece aligned with the arbor, the arbor is raised to extend through the hole in the work piece and into the cutter in the receptacle, the cutter and arbor are connected together, the cutter and arbor are lowered and rotated so that the cutter engages and treats the work piece about the hole in the work piece.

4,281,948

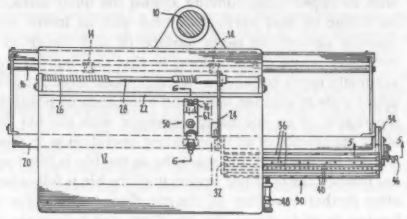
INDEXING MEANS

John R. Van Wisse, Caulfield, Australia, assignor to Albert Edward Armitage, Victoria, Australia

Filed May 25, 1979, Ser. No. 42,635
Int. Cl.³ B23B
U.S. Cl. 408—3 **16 Claims**

1. A drilling apparatus comprising a vertically movable drilling head and a table for receiving material to be drilled, the drilling head and table being laterally movable relative to one another, said apparatus further comprising an indexing means having a plurality of rows of indexing members of pre-set spacing, and engaging means for stepwise indexing engagement with the indexing members of a selected row, whereby the material can be drilled with a desired arrangement of holes at a pre-set spacing, wherein means are provided to automatically disengage said engaging means from an indexing member in response to the completion of the drilling operation, to-

gether with movable means, movable in response to the disengagement of said engaging means, to hold said engaging means out of engagement with said indexing members until after said engaging means and said indexing member have moved out of alignment and prior to alignment of said engaging means with



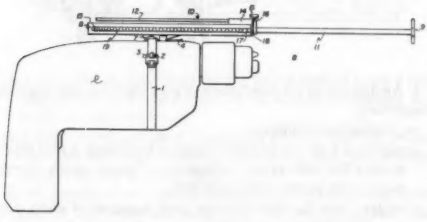
the next indexing member of said selected row, said movable means moving into a position between the engaging means and the indexing members and acting to hold the engaging means out of engagement until alignment of said engaging means with the next indexing member.

4,281,949

COMBINATION DEPTH GAUGE AND LEVEL FOR A DRILL

Tony L. Bugarin, 9808 Fair Oaks #606, Fair Oaks, Calif. 95628

Filed Aug. 6, 1979, Ser. No. 63,744
Int. Cl.[3] B23B *39/00*
U.S. Cl. 408—241 R **5 Claims**



1. A combination depth gauge and level for a drill and its associated drill bit comprising in combination:

an elongate plunger means defined by an elongate casing supported on the said drill, means to fasten said plunger means to the drill a spring disposed within said casing, a plunger rod partially within said casing abutting said spring and extending out from said casing towards a forward portion of the said drill, guide means on a terminal portion of said plunger rod remote from said spring, said casing including a linear groove on an elongate face thereof substantially coextensive with said casing, a bolt affixed to said plunger rod and extending out from said groove thereby constrained to ride within said groove,

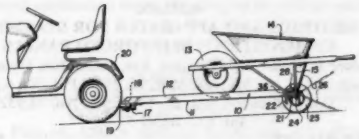
a depth gauge means defined by a trackway disposed on said casing, a ruler slideably disposed within said trackway and passing through a support carried on said casing at an end thereof through which said plunger rod passes, and a thumbscrew threaded on said support whereby when tightened, said thumbscrew clamps down on said ruler and said depth gauge has been locked.

4,281,950

WHEELBARROW TRANSPORT DEVICE

Maurice E. Lehman, 1960 Horseshoes Rd., Lancaster, Pa. 17601, and Roland P. Gehman, Stevens, Pa., assignors to Maurice E. Lehman, Lancaster, Pa.

Filed Apr. 6, 1979, Ser. No. 27,723
Int. Cl.[2] B60P *1/24*
U.S. Cl. 410—3 **1 Claim**



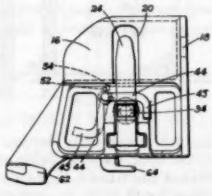
1. A wheelbarrow transport vehicle comprising a longitudinal upwardly open channel member adapted to receive guidingly and support a wheelbarrow wheel and adapted to have its forward end coupled to a towing vehicle, a transverse downwardly open channel member rigidly coupled in back-to-back relationship to the longitudinal channel member near the rear end of the latter and extending equidistantly on opposite sides thereof, a pair of support wheels for the vehicle journaled on the opposite ends of the transverse channel member, a ramp plate for a wheelbarrow wheel hingedly secured to the longitudinal channel member at the rear thereof and having substantially the same width as the longitudinal channel member, past dead center biasing spring means for the ramp plate connected between the ramp plate and the longitudinal channel member, and a pair of wheelbarrow leg locking units on the transverse channel member on opposite sides of the longitudinal channel member, the transverse channel member having adjusting apertures for said units on opposite sides of the longitudinal channel member, attaching means for said units engageable within selected adjusting apertures, each locking unit including a body portion having spaced upstanding side walls and a rear partial wall defining with said side walls a pair of bolt handle receptor slots, and each unit including a transverse axis locking bolt having an adjusting handle engageable selectively in either of said receptor slots, said bolts when in active locking positions projecting laterally outwardly of said body portions and locking the legs of a wheelbarrow to the transverse channel member, such channel member having wheelbarrow leg support surfaces outwardly of said locking units and between the units and said support wheels.

4,281,951

CONTAINER PEDESTAL SUPPLEMENTAL LOCK

Thomas B. Baker, and Richard J. Mandrell, both of St. Charles, Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Jan. 11, 1980, Ser. No. 111,505
Int. Cl.[3] B60P *7/10;* **B65J** *1/22;* **B61D** *45/00*
U.S. Cl. 410—70 **12 Claims**



1. In a container pedestal including a base and a spring biased latch pivotably mounted about a horizontal axis and having a nose extending through an opening in the pedestal; said nose including upper and lower inclined surfaces which are engaged

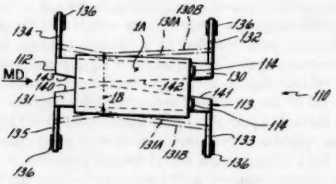
by the container respectively as the container enters the pedestal and exits from the pedestal; the improvement comprising: a supplemental locking member extending horizontally through an opening in said base; said supplemental locking member including a movable lug rotatable to a weighted position engaging a fixed lug on the pedestal; thereby tending to prevent the latch from pivoting about its horizontal axis to allow exit or entry of containers.

4,281,952

METHODS AND APPARATUS FOR STACKING CEMENTITIOUS REINFORCED PANELS

Theodore E. Clear, 903 Harrison Ave., Hamilton, Ohio 45013

Division of Ser. No. 887,324, Mar. 16, 1978, Pat. No. 4,203,788.
This application Sep. 26, 1979, Ser. No. 78,932
Int. Cl.³ B65G *57/00*
U.S. Cl. 414—82 **5 Claims**



1. A method of stacking flexible assemblies, each comprising an uncured cementitious panel carried on a carrier sheet, one atop another, comprising the steps of:

conveying an assembly onto a drop table, said drop table comprising a plurality of drop panels supporting said carrier sheet and withdrawable therefrom to drop said assembly onto a stack of assemblies, said drop plates having tapered edges beneath said carrier sheets;

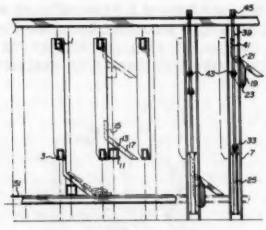
withdrawing support from said carrier sheet, first from corners thereof and then form central portions thereof, to drop said assembly, all by sliding said drop plates horizontally from beneath said carrier sheet.

4,281,953

VERTICAL SORT BIN

W. R. Newnes, 2621 4 Ave. NE., (P.O. Box 8), Salmon Arm, British Columbia, Canada

Filed Mar. 13, 1978, Ser. No. 886,305
Int. Cl.³ B65G *57/03*
U.S. Cl. 414—268 **4 Claims**



1. A sort bin having substantially vertical bin walls and a vertically movable bin floor, the floor being mounted such that it is in a predetermined and fixed inclined attitude throughout its vertical movement, said sort bin comprising:

a pair of spaced apart, facing, substantially vertical bin walls supported at their ends between vertical columns of an I-beam configuration;

a downwardly inclined bin floor extending between said bin walls, said bin floor consisting of a plurality of downwardly inclined arms and a horizontal beam, each arm being secured to said horizontal beam; and

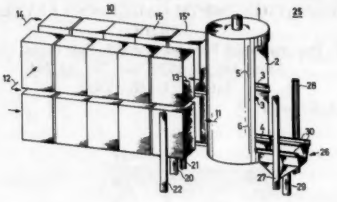
a carriage having an upper roller and a lower roller rigidly secured to its upper end and its lower end respectively, the carriage being supported from and guided between the columns of one bin wall, each carriage being disposed with its upper roller running against the inner surface of on flange of said vertical column and its lower roller running against the outer surface of said flange to be vertically movable therealong so that said bin floor can vertically move between a raised position adjacent to the upper ends of said bin walls and a lower-most position at the region of an unloading conveyor with the bin floor being maintained at all times during operation in its downwardly inclined attitude whereby as the bin is filled with cut lumber, the bin floor lowers until the bin is full, whereafter further lowering of the bin floor permits the cut lumber to slide down the bin floor and below the bin walls, at which time the cut lumber discharges onto said unloading conveyor.

4,281,954

APPARATUS FOR IRRADIATION OF PIECE GOODS

Ernst Bosshard, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 30, 1978, Ser. No. 910,096
Claims priority, application Switzerland, May 27, 1977, 6545/77
Int. Cl.³ B65G *65/00*
U.S. Cl. 414—287 **13 Claims**



1. An apparatus for irradiation of piece goods, said apparatus comprising

an irradiation chamber;

a conveying means in said chamber including a plurality of trollies for conveying a sequence of piece goods through two levels within said chamber;

a rotary lock for introduction and removal of each piece goods of the sequence of piece goods into and out of said chamber, said rotary lock having two levels, one of said levels being disposed to permit entry of a piece goods into said chamber and the other of said levels being disposed to permit exit of a piece goods from said chamber; and

a lifting means for conveying empty trollies between said levels of said rotary lock, said lifting means being disposed before and immediately adjacent said rotary lock.

4,281,955

METHOD AND APPARATUS FOR UNLOADING BULK MAIL VANS

Joseph E. McWilliams, 1345 Canterbury La., Glenview, Ill. 60025

Filed Oct. 31, 1979, Ser. No. 89,962
Int. Cl.³ B65G *65/00, 67/00, 15/00*
U.S. Cl. 414—398 **16 Claims**

1. In a facility for unloading discrete bagged and cartoned goods from the load receiving area of an end loading transport vehicle including an unloading dock having an unloading bay defining a load receiving shoulder equipped with a dock plate

adapted to bridge the gap between the loading dock and the vehicle end opening when the vehicle is backed into load discharging relation with respect to the bay, and an elongate mobile unloading conveyor mounted on the loading dock for movement along a rectilinear path between a retracted position on the loading dock in which the load receiving end of same is spaced from the dock plate inwardly of the loading dock and an extended relation for movement of the load receiving end of same across the dock plate into the vehicle load receiving area for having applied to the load receiving end of same the bagged and cartoned goods to be unloaded from the vehicle, and means for driving the conveyor to convey the bagged and cartoned goods received thereon onto the loading dock as they are applied to the conveyor load receiving end, the improvement comprising:

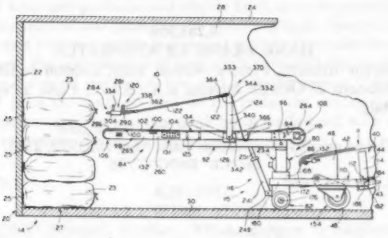
a chassis connected to the unloading conveyor adjacent its load receiving end and disposed in advance of same with respect to the unloading bay,

said chassis journalling wheels, on which said chassis rides, for rotation about a common axis extending transversely of the movement path,

said chassis being pivoted to the conveyor for swinging movement relative thereto about a horizontal axis extending transversely of the unloading conveyor,

said chassis journalling an upright shaft for pivotal movement about an axis that is normal to the movement path,

said shaft and said axis of said wheels being in coplanar relation in an upright plane extending transversely of the movement path,



said shaft having mounted on the upper end of same a conveyor head for movement about an axis extending normally of said shaft axis,

said head being cantilever mounted on said shaft to project over the dock plate when horizontally disposed in alignment with the movement path,

an adjustable strut structure connected between the lower end of said shaft and said head for supporting said head cantilever fashion from said shaft and including power means for adjusting the length thereof for adjusting the forward end of said head vertically,

said head including an endless conveyor presenting an upwardly facing load receiving run and including means for driving said run to move toward the unloading conveyor,

said endless conveyor having a load receiving end adjacent the forward end of said head and a load discharge end at the other end of said heard disposed to discharge the bagged and cartoned goods onto the load receiving end of said mobile conveyor when said head is substantially aligned therewith,

said shaft being journalled for free swinging movement of same and said head about said shaft pivot axis with sufficient static friction opposing said swinging movement to maintain said head and shaft at desired positions of manual adjustment angularly of said shaft pivot axis,

said head carrying a bag shifting mechanism including:

a manually manipulatable bag gripping hand tool,

a cable connecting said hand tool to said head adjacent one side of said head intermediate the ends of said head,

said cable having sufficient length to permit said tool to be manually extended beyond the forward end of said head for application in gripping relation to a bag to be shafted from a position of rest in the vehicle onto the head conveyor run, when said head has been positioned to be adjacent and directed toward the bag,

means for drawing said cable longitudinally of said head to draw the bag onto the head conveyor run,

and means for automatically releasing said tool from the bag when the bag is conveyed by said head conveyor run for manual application to another bag to be shifted onto said head.

4,281,956

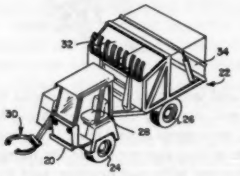
CONTAINER HANDLING MECHANISM FOR TRASH COLLECTING VEHICLES

John W. Pickrell, 4206 N. 68th St., Scottsdale, Ariz. 85251

Continuation-in-part of Ser. No. 710,621, Aug. 2, 1976, abandoned. This application May 16, 1977, Ser. No. 797,530

Int. Cl.³ B65B *21/02*

U.S. Cl. 414—409 **4 Claims**



1. In a container handling mechanism for trash collecting vehicles; a frame; a container grasping and pickup means moveably mounted on said frame; actuating means for said grasping and pickup means; said actuating means disposed to move said grasping means upwardly and downwardly; said actuating means provided with pivotal support means adapted to swing said grasping and pickup means about a generally horizontal axis so as to transfer said grasping means from an upright position to an elevated substantially upsidedown position; said container grasping and pickup means comprising a pickup arm; pivotal axis means pivotally mounting said arm on a pivotal support to pivot about said generally horizontal axis; said actuating means disposed for concurrently elevating said pivotal support means and rotating said arm about said generally horizontal axis, of said pivot axis means, to said elevated substantially upsidedown position in which the contents of said container may be emptied into a trash receiver; said actuating means being provided with arcuate means coupled to said arm; and means constantly engaged with said arcuate means and connected to said frame; and means for actuating said pivotal support upwardly and downwardly on said frame to an uppermost position and to a lowermost position whereby constant engagement of said arcuate means with said actuating means causes continuous and concurrent pivotal movement of said arm about said horizontal axis as it moves upwardly and downwardly between said uppermost position and said lowermost position.

4,281,957

PROJECTILE DOLLY FOR SEPARATE LOADING AMMUNITION

Richard A. Vishe, 2723 S. Queen St., York, Pa. 17403, and Richard A. Koster, R.D. 11, York, Pa. 17406

Filed Apr. 26, 1979, Ser. No. 33,505

Int. Cl.³ B62B *1/14*

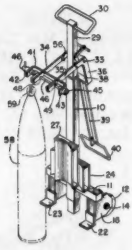
U.S. Cl. 414—457 **1 Claim**

1. A dolly for handling at least one projectile of separately loading ammunition, the projectile having a nose plug and a ring for the plug, the dolly having a frame and a pair of spaced

rollers mounted on an end of said frame, the improvement comprising a housing member mounted on said frame above and away from said rollers curved to accommodate the curvature of said at least one projectile;

a lever pivoted on said frame above said housing, an actuating arm for said lever on side of said frame above said rollers, at least one fork on said lever on a side of said frame above said housing;

a pin for sliding in said at least one fork to pass through the ring of the nose plug of said at least one adjacent projectile whereby when the dolly is moved adjacent an at least one



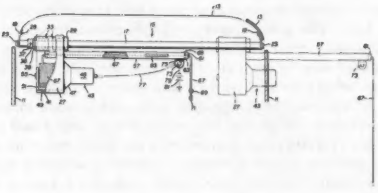
projectile and said lever is rotated about the pivot in one direction said pin may be passed through the ring, and thereafter, movement of said lever in an opposite direction will lift the at least one projectile for swinging movement into engagement with said housing, said lever comprising a pair of spaced arms on opposite sides of said frame, a U-shaped cross-piece extending across and secured to said arms above said housing member, said arms extending beyond said U-shaped cross-piece forming a center fork and a fork on each side of said center fork and aligned openings in said forks to receive said pin.

4,281,958

WHEEL CHAIR HOIST ASSEMBLY FOR VEHICLES

Bernard E. Molski, 5001 Coventry, Royal Oak, Mich. 48073

Filed Dec. 13, 1979, Ser. No. 97,688
Int. Cl.³ B60P *1/02*
U.S. Cl. 414—542 **10 Claims**



1. A wheel chair hoist assembly adapted for mounting within the interior of a vehicle having a body provided with an access opening on the driver's side of the vehicle, a front seat adjacent the access opening, with the access opening controlled by a door which may be opened to permit a person to enter the body and to use the wheel chair hoist assembly and the front seat, a battery and a roof comprising:

an elongated support bar located entirely within the body rearwardly of the seat extending transversely of the length of the body;

hanger brackets connected to the ends of said support bar and secured to the roof adjacent the opposite sides of the body;

a mount tube slidably supported upon said support bar;

a winch mount bracket fixedly secured to and depending from said mount tube;

a boom located parallel to and spaced below said support bar at one end secured to said mount tube, with its other end projecting laterally of said mount tube and said winch mount bracket; said boom having a length less than the length of said support bar;

said boom being normally positioned within the body;

said boom being manually slidable along said support bar for projecting said other end of said boom laterally outward of the vehicle body through the access opening on the driver's side of the vehicle;

a power operated winch assembly secured upon said winch mount bracket and including a reversible rotatable drum;

a cable at one end secured to and mounted around said drum, longitudinally and guidably projected through the interior of said boom, with its free other end depending from said other end of said boom;

a hook mounted upon said other end of said cable adapted to supportably engage a collapsed wheel chair;

and a manually operable control switch means mounted on said boom interconnecting said winch assembly and battery;

said winch assembly adapted to lift the collapsed wheel chair a predetermined distance;

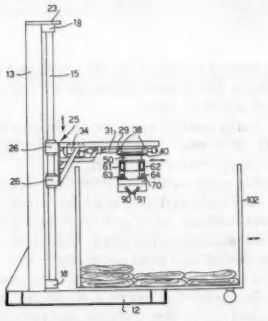
said boom being successively slidable manually to project the collapsed wheel chair into the body for storage in the vehicle body behind the front seat.

4,281,959

HANK TRANSFER APPARATUS

Federico Minnetti, Pieve a Nievole, Italy, assignor to Officine Minnetti di Ornella Raveggi & C. S.A.S., Pieve a Nievole, Italy

Filed Jul. 16, 1979, Ser. No. 57,802
Claims priority, application Italy, May 10, 1979, 22531 A/79
Int. Cl.³ B65G *47/36*
U.S. Cl. 414—668 **12 Claims**

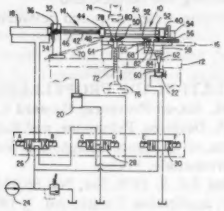


1. An apparatus for hank transfer from a hank-carrier to a holding or transporting device, said apparatus comprising a base (**12, 13**); a rod holding movable head (**72**) mounted for horizontal and vertical movement with respect to said base; a pair of extended rods (**90, 91**) on said head, which are substantially parallel to each other and movable with respect to said head between a closed approach position and a spread apart position; means for controlling the movement of said rods between said positions; and movement means for moving said head including means for moving said head in a direction substantially parallel with the direction in which said rods extend from said head, said rods in said closed approach position being positioned close to each other to minimize transverse dimensions of said rods.

4,281,960
AUTOMATIC BROACH MACHINE LOADER

John X. Russell, Troy, Mich., assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 5, 1979, Ser. No. 72,797
Int. Cl.[3] B65G 25/02
U.S. Cl. 414—750 8 Claims

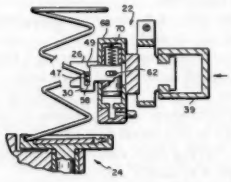


1. A device for supplying parts to and for removing parts from a machining station having a machining tool acting in a reciprocating manner between a start machining position and a finish machining position comprising a shuttle table on which said parts are conveyed to said machining station, means for indexing said parts on said shuttle table as they traverse same to said machining station, and means for removing said parts from said machining station at the end of the movement of the tool through said part, said indexing means being selectively engaged with said parts on said shuttle table so as to permit the advancement of said parts on said shuttle table in one position when said indexing means is engaged with parts on said shuttle table and the introduction of new parts onto said shuttle table during a second position when said indexing means is disengaged from the parts on said shuttle table, the machining of said part at said machining station being performed with said indexing means in said second position.

4,281,961
COIL TRANSFER APPARATUS

Howard E. Redman, Duxbury, Mass., assignor to Mathewson Corporation, Quincy, Mass.

Filed Sep. 13, 1978, Ser. No. 941,774
Int. Cl.[3] B65G 47/90
U.S. Cl. 414—751 11 Claims

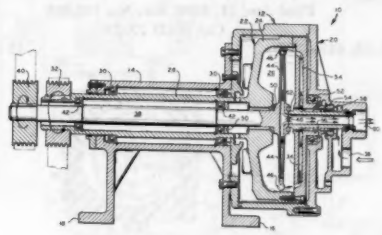


10. In a coil transfer apparatus, means defining a recess having a concavely-arcuate surface and first spaced, parallel surfaces symmetrically positioned and perpendicular to the axis of the arcuate recess for receiving an arcuate portion of a coil, a latch member movable into the recess to close a portion of the open side thereof to thereby retain the coil in the recess, said latch defining second spaced, parallel surfaces perpendicular to the first spaced, parallel surfaces with one of said spaced, parallel surfaces tangent to the arcuate surface and the other spaced therefrom, said spaced, parallel surfaces defining in conjunction an enclosure within the recess for capturing the coil and a freely-rotatable roller supported between the second spaced, parallel surfaces for rotation about an axis parallel to the first spaced, parallel surfaces, said roller defining one side of the enclosure.

4,281,962
HIGH PRESSURE CENTRIFUGAL PUMP

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Mar. 23, 1979, Ser. No. 23,206
Int. Cl.[3] F04B 25/08
U.S. Cl. 415—89 14 Claims

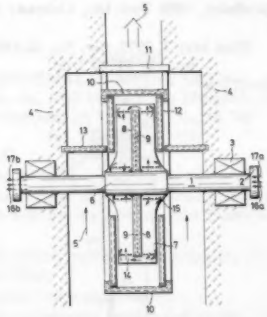


1. A centrifugal pump for pumping fluids under relatively high pressure comprising: a rotor assembly supported for rotation about an axis and defining a chamber; fluid inlet means in fluid communication with said chamber; fluid pickup means supported for rotation about said axis in said chamber for collecting fluid from said chamber; and outlet means in fluid communication with said pickup means for discharging said fluid at the relatively high pressure when said rotor assembly and said pickup means are rotated in opposite directions.

4,281,963
APPARATUS FOR THE CONVEYANCE AND/OR TREATMENT OF HOT GASES

Heinrich Buchner, Bochum-Weitmar, and Hannes S. Horn, Dortmund, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,805
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836163
Int. Cl.[3] F01D 5/08, 5/18
U.S. Cl. 415—178 14 Claims



1. A shaft furnace or kiln ventilator system for cooling material laden hot gases produced during calcination and sintering of one of the materials selected from the group consisting of lime, dolomite, and magnesite, comprising: a liquid cooled ventilator positioned in the furnace or kiln to convey the hot gases and having a rotating shaft and radial blades extending from a hub on said shaft, and a disc on said hub extending perpendicular to the shaft, perpendicular to a major surface of the blades, and bisecting the blades along a line of connection therewith; a guide housing at least partially surrounding the radial blades; and a means for introducing a heat

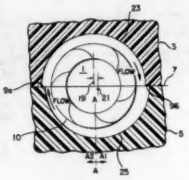
carrying liquid into the ventilator through the rotating shaft and means for guiding the liquid through the radial blades.

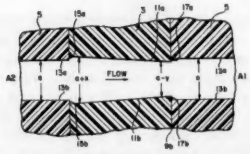
4,281,964

TURBINE HOUSING AND METHOD FOR MAKING THE SAME

Danny R. Jinkins, Bel Air, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Jan. 21, 1980, Ser. No. 113,801
Int. Cl.³ F01D *25/24*
U.S. Cl. 415—203 **15 Claims**





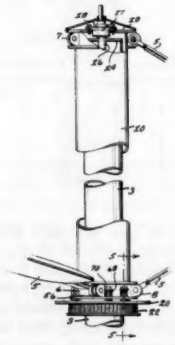
1. A turbine housing formed from at least two mating members, said at least two mating members having mating wall portions which are positioned adjacent to each other to form the peripheral walls of said housing, wherein said mating wall portions are offset from one another such that the distance from the plane through the center of the housing and parallel to the walls of the mating members, to the first mating wall portions, in the direction of fluid flow in the turbine, is less than or equal to the distance from said plane to the second mating wall portions, in the direction of flow.

4,281,965

CANTILEVER MOUNTED WIND TURBINE

Dale T. Stjernholm, 1490 Tari Dr., Colorado Springs, Colo. 80908

Filed May 7, 1979, Ser. No. 36,420
Int. Cl.³ F03D *3/06*
U.S. Cl. 416—227 A **4 Claims**



1. A moment decoupling connection between first and second concentrically mounted and respectively rotatably members, including:

radial thrust bearing means having first and second bearing surfaces;

means securing the first bearing surface to the said first member; and

means flexibly coupling the second bearing surface to the said second member including:

a pair of spaced apart flanges; a plurality of circumferentially equi-spaced torque transmitting drive pin means interconnecting the flanges; and

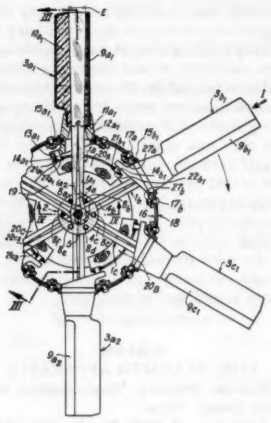
elastic cushioning means disposed between the flanges.

4,281,966

MULTI-BLADE PROPELLERS

Maurice L. Duret, Aix-en-Provence; Bernard L. J. Lamarche, Velaux; Marc A. Declercq, Pelissanne, and Robert D. Martin, Aix-en-Provence, all of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Jul. 5, 1979, Ser. No. 55,096
Claims priority, application France, Jul. 7, 1978, 78 20258
Int. Cl.³ B64C *11/06, 11/32*
U.S. Cl. 416—134 A **12 Claims**



1. A variable pitch multi-blade propeller of use more particularly as the rear rotor of a rotary-wing aircraft comprising

an axis of the rotor,

at least one pair of blades mounted diametrically opposed with respect to said rotor axis,

a tubular rotor driving shaft bearing a rigid rotor hub rotatably mounted around said rotor axis,

said at least one pair of blades including

a single composite spar common to the two said blades secured at its central part to said rotor hub and made of fibers having high mechanical strength and agglomerated by a synthetic resin,

and two radial shells having an aerodynamic cross-section and secured to said composite spar, one on each side of said rotor hub,

a pitch control shaft slidingly mounted through said tubular driving shaft, said hub and the central part of each said spar for collectively controlling the pitch angles of all said blades,

a coupling element substantially perpendicular to and integral with said pitch control shaft,

a pitch control assembly with the inward end of each said shell secured to said assembly and subjecting said shell to a torque centered on the longitudinal axis of the corresponding said spar,

each said composite spar being made up of a single elongated strip, the fibers of which are all unidirectional and longitudinal fibers,

said strip being made up in its central portion, between said two corresponding shells, of two flat bundles each presenting fibers all extending without any interruption from one end of said corresponding bundle to the other end, and having a slot defined in the middle of said strip by the central parts of said two bundles being separated one from the other,

said pitch control shaft directly and freely slidingly mounted thrugh said slot,

said shell of each said blade being internally connected along its entire length to the corresponding part of said elongated strip by a mass of adhesive synthetic cellular or foam material.

4,281,967

RESONATOR DEVICE FOR DAMPING THE VIBRATIONS OF A ROTOR OF A ROTARY-WING AIRCRAFT

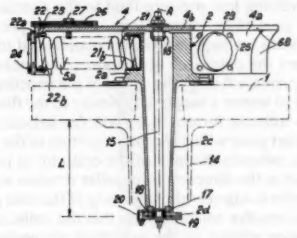
Rene L. Mouille, Aix-en-Provence; Gérard C. L. Genoux, Gardanne; Marc A. Declercq, Pelissanne; Jèan-Luc M. Leman, Aix-en-Provence, and Robert J. Suzzi, Marseilles, all of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Feb. 5, 1979, Ser. No. 9,578

Claims priority, application France, Feb. 10, 1978, 78 03810

Int. Cl.³ B64C *27/32*

U.S. Cl. 416—145 **19 Claims**



2. A resonator device for damping the vibrations of a rotary-wing aircraft rotor having a shaft supporting a hub (1) to which at least two blades extending radially are attached,

said resonator device comprising a substantially annular weight (4) disposed concentrically of the rotor axis (A) and supported substantially without bending by at least three helical springs (5*a*, 5*b*, 5*c*) whose axes radiate in directions distributed regularly around the rotor axis (A) and which are radially biased in said directions, said biased springs (5*a*, 5*b*, 5*c*) applying statically balanced centrifugal thrusts to said annular weight (4), said annular weight (4) being bell-shaped and presenting an annular skirt-like part (4*a*) and a flat top member (4*b*), said skirt-like part (4*a*) being concentric of a spindle (2) axially extending the rotor shaft above a rigid central part of the hub (1) and said flat top member (4*b*) extending transversely of said spindle (2).

wherein the inner end of each said springs (5*a*, 5*b*, 5*c*) bears directly on said spindle (2) and the outer end of each said springs (5*a*, 5*b*, 5*c*) bears directly on said skirt-like part (4*a*) and wherein said bell-shaped annular weight (4) is formed in registration with each rotor blade with an aperture (6A, 6B, 6C) extending at least in its skirt-like part (4*a*) and enabling said corresponding blade to make vertical flapping movements.

4,281,968

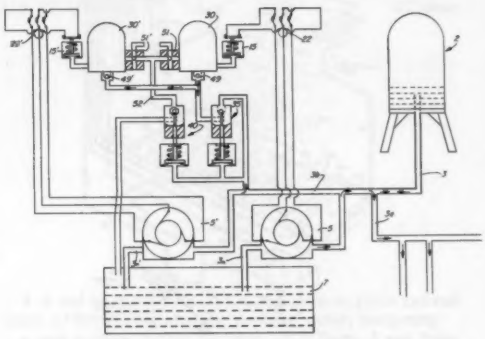
WATER STORAGE AND PUMPING SYSTEM

Francis A. Akers, 355 Peachtree St. N.E., Atlanta, Ga. 30308

Filed Aug. 21, 1978, Ser. No. 935,471

Int. Cl.³ F04B *49/02, 49/06*

U.S. Cl. 417—2 **4 Claims**



1. A pressure responsive motor control system comprising:

at least one electrical motor;

a source of electrical power;

pressure responsive switching means interconnecting the motors and the source of electrical power;

first and second oppositely operating pressure responsive fluid valves, each having fluid inputs and outputs;

a source of fluid pressure connected in parallel to the said pair of valves and to the input of the first valve;

at least one pressure tank;

means interconnecting the tanks to the output of the first valve including a reverse flow check valve;

drain means connected to the tank, including at least one bleed valve and the second valve; and

conduit means interconnecting the tank and the switching means.

4,281,969

THERMAL PUMPING DEVICE

Ernest L. Doub, Jr., 4593 Orchard St., Montclair, Calif. 91763

Filed Jun. 25, 1979, Ser. No. 51,700

Int. Cl.³ F04B *19/24*

U.S. Cl. 417—52 **7 Claims**

1. A cell for pumping a first fluid, and which cooperates with an associated heat sink, an associated heat source, and associated first and second heat transfer fluids, which comprises:

means for alternately heating and cooling the first fluid with the second fluid,

first and second one-way valves,

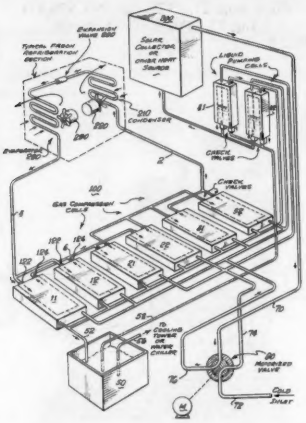
said means for alternately heating and cooling comprising a fluid chamber in fluid communication with the heat source via said first one-way valve and communicating with the associated heat sink via said second one-way valve, said first and second one-way valves permitting flow of said first fluid only in a direction from the associated heat source and toward the associated heat sink,

a heat transfer jacket disposed about said chamber for directing circulation of the second fluid about said chamber, and

means for alternately admitting heated and cooled second fluid to said jacket,

whereby at least some of the first fluid in said chamber is

alternately cooled to reduce pressure in the chamber to draw pumped first fluid thereinto via said first one-way



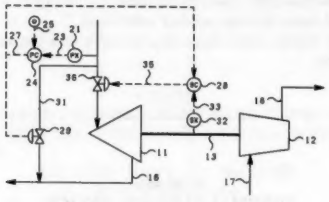
valve, and heated to increase pressure therein to discharge pumped first fluid via said second one-way valve.

4,281,970

TURBO-EXPANDER CONTROL

William S. Stewart, and Virgil R. Spurgeon, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 15, 1979, Ser. No. 48,930
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—53 **7 Claims**



4. A method for controlling a system in which a turbo-expander is utilized to drive a compressor comprising the steps of:

supplying a fluid through a first control valve to the suction inlet of said turbo-expander;

withdrawing a fluid from the discharge outlet of said turbo-expander;

supplying a fluid to the suction inlet of said compressor;

withdrawing a fluid from the discharge outlet of said compressor;

establishing a first signal which is a function of the pressure at the suction inlet of said turbo-expander, said first signal having a first range and a second range where at least a part of the first range of said first signal is outside the second range of said first signal and at least a part of the second range of said first signal is outside the first range of said first signal;

manipulating said first control valve in response to the first range of said first signal to thereby manipulate the flow of fluid to the suction inlet of said turbo-expander; and

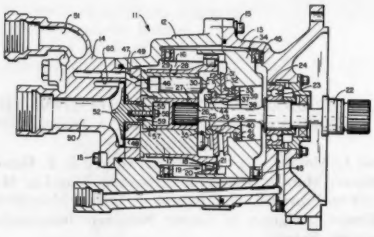
recycling fluid from the discharge outlet of said compressor to the suction inlet of said compressor through a second control valve, which is manipulated in response to the second range of said first signal, said second control valve being substantially fully closed when said first signal is in the first range, the transition point between said first range and said second range of said first signal being selected so as to be substantially representative of the substantially maximum operating speed of said turbo-expander.

4,281,971

INLET INDUCER-IMPELLER FOR PISTON PUMP

Herbert H. Kouns, Camarillo, Calif., assignor to ABEX Corporation, New York, N.Y.

Filed Jul. 31, 1979, Ser. No. 62,599
Int. Cl.³ F04B *23/14*
U.S. Cl. 417—203 **2 Claims**



1. An axial piston pump which comprises: a housing, a port cap which closes one end of the housing, a barrel rotatably mounted in the housing, a shaft attached to the barrel for driving the barrel, a plurality of pistons mounted in bores for reciprocation within the barrel, a port plate having an inner face adjacent one end of the barrel, an inlet port in the port plate for directing low pressure fluid to the pistons, an outlet port in the port plate for receiving discharge pressure fluid from the pistons, an impeller rotatably connected to the drive shaft adjacent the outer face of the port plate, means for supplying low pressure fluid to the center of the impeller to enable the impeller to impart a tangential velocity to the fluid, characterized by a collector formed in the port cap adjacent the outer face of the port plate which receives a portion of the fluid from the impeller, wherein the inlet of the collector is just beyond the inlet port in the direction of impeller rotation and the exit of the collector is adjacent the beginning of the inlet port in the direction of impeller rotation, such that the collector is adjacent the major portion of the impeller's circumference, the collector directs the axial velocity component of the fluid in the direction of the inlet port, means for directing a substantial portion of the fluid exiting from the collector back into the impeller before it flows into the inlet port to thereby increase the fluid's tangential velocity to that of the piston barrel cylinder ports, wherein the fluid from the collector which enters the impeller combines with fluid which flows directly from the impeller to the inlet port and the combined fluid entering the inlet port is at substantially the same tangential velocity as the piston barrel ports.

4,281,972

APPARATUS FOR CONTROLLING THE PERFORMANCE OF A MOTOR COMPRESSOR

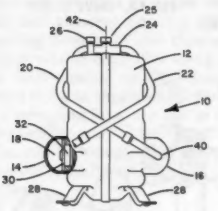
John J. Jacobs, Pulaski, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,868
Int. Cl.³ F04B *35/04*
U.S. Cl. 417—415 **4 Claims**

1. Apparatus for controlling the performance of a motor compressor unit enclosed within a hermetically sealed shell and having at least two cylinders in which a gas is compressed comprising:

a plurality of cover means, with each cylinder surrounded by a cover means defining a suction plenum for receiving gas at suction pressure; and

a plurality of conduit means disposed externally of said hermetically sealed shell for delivering gas to said suction plenums, with a first end of each conduit means connected



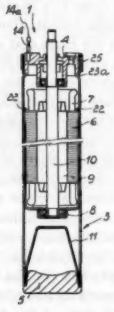
to a suction plenum and second ends of said conduit means interconnected for coherently conducting pressure pulses between the suction plenums to vary the pressure thereof.

4,281,973

CASE STRUCTURE FOR ROTARY MACHINES

Gaetano Meneghello, Via Contra Lodi, 48, Vicenza, Italy

Filed Feb. 5, 1979, Ser. No. 9,613
Claims priority, application Italy, Feb. 9, 1978, 20125 A/78
Int. Cl.³ F04B *39/12, 39/14*
U.S. Cl. 417—424 **8 Claims**



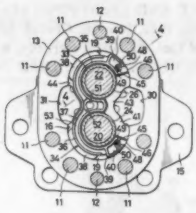
1. A case structure for rotary machines of the type having prevailingly axial extension and at least one stationary portion and at least one rotary portion, in particular for electric motors and multistage pumps, the case structure comprising at least one tubular member having two ends and a plurality of roll-formed threaded portions and at least one roll-formed groove in the wall of said tubular member, said plurality of threaded portions including at least one threaded portion for threadably supporting said at least one stationary portion within said at least one tubular member, at least another threaded portion between said at least one threaded portion and one of said ends for threadable engagement with a support for said at least one rotary portion within said at least one tubular member, and at least one further threaded portion at each of said ends for threadably engaging respective end caps of said case, said threaded portions having a depth such as to allow subsequent insertion and removal in an axial direction of said at least one stationary portion and said at least one rotary portion through said one of said ends into, and out of, said tubular member, and said at least one groove being arranged at a position adjacent said at least one threaded portion and having a depth such as to lock axially at least said at least one stationary portion.

4,281,974

SEAL MECHANISM IN GEAR PUMPS OR MOTORS

Hideo Teruyama, Shobu, Japan, assignor to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,783
Claims priority, application Japan, Sep. 19, 1978, 53-114831
Int. Cl.³ F03C *2/08;* **F04C** *2/18, 15/00*
U.S. Cl. 418—132 **4 Claims**



1. A seal mechanism for use between pressure plates and end plates of the housing of a gear pump or motor, comprising

a seal member having the shape of a figure **3** and being adapted to subdivide the interior of the pump or motor into a high-pressure zone and a low-pressure zone, said seal member having a body and spaced ends each provided with a loop-shaped portion which surrounds a space; a plate member engaging said spaced ends, and

a block member accommodated in each of said spaces and movable relative to the respectively adjacent pressure plate, each of said block members having a free end facing in direction away from said body and provided with a face which tapers in said direction

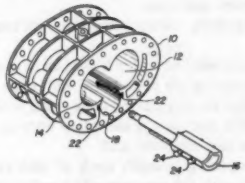
whereby fluid pressure from said high pressure zone acting on said body forces the loop-shaped portions and block members against the plate member so that said tapered faces press the loop-shaped portions.

4,281,975

ANTI-FRICTION SLIDE VALVE SUPPORT FOR SCREW COMPRESSOR

Thomas D. Blackwell, 136 Monument Rd., York, Pa. 17403

Filed Oct. 9, 1979, Ser. No. 82,680
Int. Cl.³ F04C *18/16, 29/08;* **F16C** *29/04*
U.S. Cl. 418—201 **7 Claims**



1. A screw compressor comprising a pair of coacting helical screw rotors operable within complementary intersecting bores within a housing, and a slide valve axially movable in parallelism with the axes of said rotors within a substantially cylindrical bore formed in said housing below and partially intersecting said complementary intersecting bores, said side valve forming a continuation of said intersecting bores so as to be closely adjacent the screw rotors, in combination with rotatable anti-friction means mounted in at least one longitudinal groove in said cylindrical bore for horizontal operation between said cylindrical bore and slide valve longitudinally of the axis thereof and operable to prevent rotation of said slide valve about its longitudinal axis and to support said slide valve relative to said cylindrical bore and minimize friction therebe-

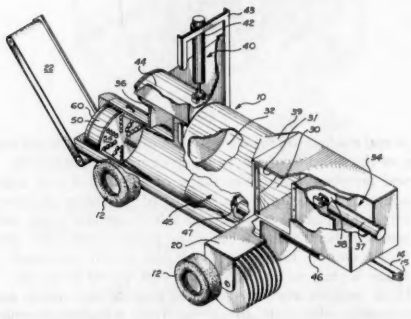
tween, thereby minimizing the force required to move said slide valve axially within said cylindrical bore.

4,281,976

PELLET AND CHOPPING MACHINE

William K. Nichols, P.O. Box 18, Corral, Id. 83322

Filed Oct. 12, 1979, Ser. No. 84,356
Int. Cl.³ A23L *1/01*; B28B *1/00*
U.S. Cl. 425—62 **7 Claims**



1. In an apparatus for forming hay pellets from bales of hay, such apparatus having means for urging a bale of hay through a bale chamber, the improvement comprising:

a pellet forming die plate disposed within the bale chamber to rotate about a center, said die plate including;

a front face disposed towards the bale of hay,

a rear face disposed opposite said front face, and

a plurality of elongate pellet forming bores extending diagonally through said die plate from said front face to said rear face, with each of said bores having an entrance opening at said front face and an exit opening at said rear face, said exit opening trailing said entrance opening relative to the direction of rotation of said die plate;

a cutter knife disc secured to the front face of said die plate for cutting said hay away from the bale prior to entry into said die plate bores, said disc;

being substantially thinner than the thickness of said die plate,

carrying a plurality of cutter knives each in alignment with a corresponding die plate bore, with each knife having a cutting edge disposed at the same angle with respect to the cutter knife disc as the die plate bore is disposed with respect to said die plate; and

having an opening beneath each of said cutter knives in alignment with the corresponding pellet forming bore to allow hay to be urged into each pellet forming bore by the urging means after being cut by said cutter knives;

an elongate pellet compressing tube removably disposed in communication with each of said die plate bores for receiving cut hay from said bores for further compression within said tubes, each of said compressing tubes;

being aligned with a corresponding pellet forming bore,

having a forward end portion inset into the rear face portion of said die plate, and

imposing frictional drag on the hay as the hay passes through said tube to thereby further compress the hay; and

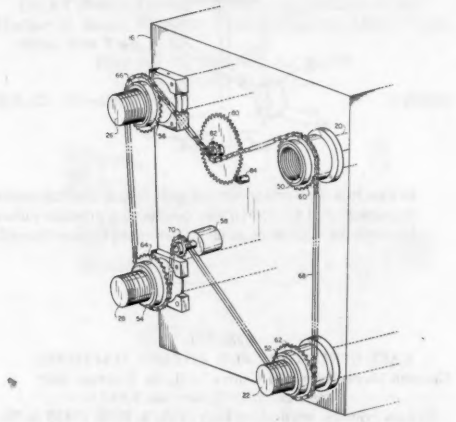
means for supporting said pellet compressing tubes in alignment with corresponding die plate bores.

4,281,977

APPARATUS FOR SETTING A CLAMPING LOAD

Robert E. Farrell, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed Oct. 1, 1979, Ser. No. 80,180
Int. Cl.³ B29F *1/00*
U.S. Cl. 425—149 **5 Claims**



1. In a molding, pressing or like machine having a first die plate that is reciprocated between opened and closed positions relative to a second die plate in a cyclic machine operation by means of a known displacement clamping mechanism connected between the first die plate and a thrust plate tied to the second die plate for reacting the clamping load between the die plates in the closed position of the die plates and drive means for moving the thrust plate and the second plate relative to one another and thereby adjusting the relative positioning of the second die plate and the thrust plate and correspondingly the clamping load between the die plates in the closed position, the drive means including a high ratio mechanical drive having a large displacement mechanical input member connected for movement by a drive motor and a small displacement output connected for movement of the second plate and thrust plate relative to one another, apparatus for establishing a predetermined clamping load between the die plates comprising: displacement sensing means operatively connected with the large displacement mechanical input of the drive means for measuring relative movement of the input from one position of adjustment to another.

4,281,978

SURFACE COATING DEVICE OF CORE BODY

Shozo Shigematsu, Habikino, Japan, assignor to Kabushiki Gaisha Mitokako, Osaka, Japan

Filed Feb. 25, 1980, Ser. No. 124,000
Int. Cl.³ B29F *3/10*
U.S. Cl. 425—376 B **11 Claims**

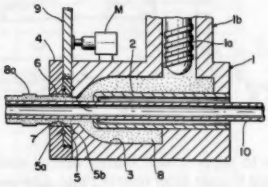
1. Apparatus for providing a synthetic resin coating on an elongate cylindrical article comprising

an extrusion body having an extrusion chamber and an extrusion opening, said extrusion opening and chamber being adapted to receive an elongate article to permit passage thereof through said chamber and out through said opening, said chamber being provided with synthetic resin inlet means for feeding extrudable synthetic resin to said chamber;

a fixed die mounted outside said chamber opening in fixed position relative thereto and having a fixed die orifice axially aligned with said chamber opening for permitting passage of said elongate article therethrough, said die

orifice being sized to provide an extruded resin coating on said elongate article and being provided along its length with a plurality of grooves in its surface extending from one end to the other of said die orifice; and

a moveable die mounted between said chamber opening and said fixed die, and having a moveable die orifice axially aligned with said chamber opening and said fixed die orifice permitting passage of said elongate article therethrough, said moveable die orifice being sized to provide an extruded resin coating on said elongate article and being provided along its length with a plurality of grooves in its surface extending from one end to the other of said moveable die orifice and which, upon rotation of said moveable die, can be brought into and out of alignment with the grooves in said fixed die;



said grooves in said moveable die orifice surface being in flow communication with said extrusion chamber whereby resin in said extrusion chamber flow thereinto;

whereby, when said grooves in said moveable die orifice surface are in alignment with said grooves in said fixed die orifice surface, said resin will flow into the grooves in said fixed die orifice surface and thus form a plurality of projections of resin spaced circumferentially about the resin coating extruded onto an elongate article passing through said die orifices;

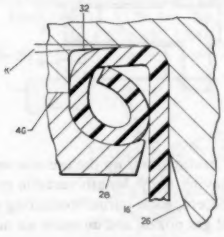
and whereby, when said grooves in said moveable die orifice surface are out of alignment with said grooves on said fixed die orifice surfaces, said resin will not flow into the grooves in said fixed die orifice surface thus interrupting the formation of said resin projections.

4,281,979

APPARATUS TO FORM A FLAT-TOPPED RIM ON A THIN-WALLED FOAM PLASTIC CONTAINER

Thomas E. Doherty, Setauket, N.Y., and William F. Herzog, Perrysburg, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 26, 1979, Ser. No. 88,450
Int. Cl.³ B29C *17/00*; B29D *27/00*
U.S. Cl. 425—391 **9 Claims**



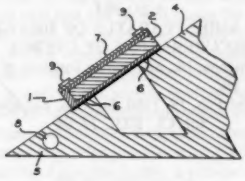
1. An apparatus for forming a flat-topped rim on a thin-walled container comprising a die cavity of toroidal configuration formed of an internal die section to which is attached a plurality of external die segments, an ingress for the insertion of a container top edge into said die cavity, said cavity when viewed in cross section being defined by an incoming first linear section for the guidance of the container top edge, a first arcuate section connected to said first linear section, a second linear section connected to said first arcuate section, a second arcuate section connected to said second linear section, a third linear section connected to said second arcuate section and a third arcuate section connected to said third linear section.

4,281,980

EXPANSION DEFORMABLE EXTRUSION DIE BLADE

John C. Hoagland, Longmeadow; Peter H. Farmer, Springfield, and Rocco M. Carabetta, Jr., East Longmeadow, all of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 18, 1980, Ser. No. 113,437
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—461 **6 Claims**



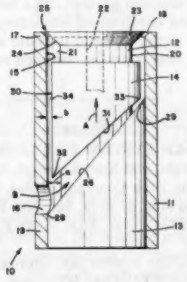
1. An integrally formed die blade having a body portion, a flexible lip portion and a plurality of elongated connector members each having one end rigidly connected to the body portion of the die blade and the other rigidly connected to the flexible lip and at least some of the said connector members being provided with heater elements such that activation of any such heater element produces expansion of the connector member and a resultant local deformation of the flexible die lip in the region of the expanded connector member.

4,281,981

DIE ASSEMBLY PROVIDING UNIFORM PRESSURE AND FLOW

Daniel W. Feldman, Beachwood, Ohio, assignor to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Feb. 25, 1980, Ser. No. 109,750
Int. Cl.³ B29F *3/04*; B29D *23/04*
U.S. Cl. 425—467 **5 Claims**



1. A die assembly for extrudable materials comprising:

a first member providing an external wall of a continuous cavity for passage of said extrudable material;

an entrance port in said first member communicating with said cavity;

a second member providing the internal wall of said cavity;

bushing means, for directing the flow of extrudable material within said cavity in one axial direction, said bushing

means providing an inclined surface continuous with the bottom of said entrance port and rising to an elevated point on said external wall opposite said entrance port;

distributor means, interposed within said cavity, for providing a restricted space therein for passage of said extrudable material and having an inclined surface originating at a point proximal said entrance port and terminating at a point opposite said elevated point, the length thereof being defined by the peripheral distance between said two points and the rise thereof being defined by the axial distance between said two points, wherein the ratio of the radial thickness of said restricted space to the radial thickness of said cavity is the same as the ratio of said rise to said length; and

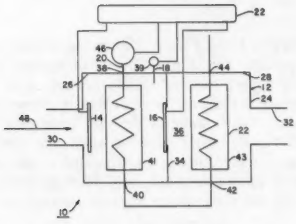
a channel formed between said inclined surfaces of said bushing and distributor means through which said extrudable material flows axially and peripherally.

4,281,982

METHOD AND APPARATUS OF HEAT-PULSED RECUPERATION OF ENERGY

Alan Kardas, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 19, 1980, Ser. No. 122,424
Int. Cl.³ F23C *11/04*
U.S. Cl. 431—1 **25 Claims**



1. A method of recuperating heat from, and imparting kinetic energy to, a gas, comprising the steps of:

(a) mixing the gas with a hereinafter-defined remainder to form an admixture thereof;

(b) confining the admixture, to produce a constant volume, confined admixture;

(c) supplying heat to the confined admixture, to produce a heated and compressed admixture;

(d) partially releasing the heated and compressed admixture, to produce a released portion and a confined remainder of the heated and compressed admixture, and to impart kinetic energy to the released portion; and

(e) transferring heat from the confined remainder to a transfer medium.

4,281,983

PREMIX BURNER SYSTEM FOR LOW BTU GAS FUEL

Hershel E. Goodnight, and Kurt S. Jaeger, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Apr. 6, 1979, Ser. No. 16,210
Int. Cl.³ F23C *5/08, 5/06, 7/00;* **F23D** *17/00*
U.S. Cl. 431—161 **1 Claim**

1. A premix burner system for alternate or simultaneous combustion of low BTU (100 BTU per cubic foot or less) higher BTU gaseous fuels in a furnace comprising;

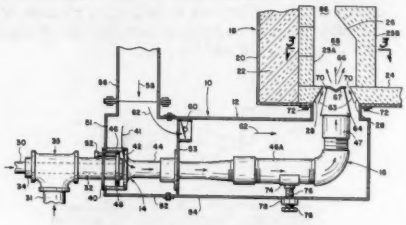
(a) an inner tube, and means to supply higher BTU gas under pressure to the upstream end of said inner tube;

(b) a larger concentric outer tube surrounding said inner tube, forming an annular space therebetween, said annular space closed at the upstream end; and means to supply said low BTU gas under pressure to said annular space;

(c) a downstream outlet for said inner and outer tubes terminating opposite and spaced from a burner tube whereby primary air is inducted and mixed with said gases for flow in said burner tube, means to control the flow of said primary air into said burner tube;

(d) a burner head comprising a long narrow rectangular structure transversely connected to said burner tube, said head tapered inwardly in the downstream direction;

(e) a furnace having a floor with a rectangular opening therein selectively larger than the dimensions of said burner heads; said opening tapering in the same direction as said burner head;



(f) means to support said burner below said furnace floor with said burner head inserted into said opening;

(g) a secondary air plenum surrounding said burner tube and leading to the annular space between said burner head and said opening in said furnace floor; and including means to control the flow of air into said secondary air plenum;

(h) an enclosure means surrounding the primary and secondary air inlet portion of said burner system, forming a combustion air plenum; and

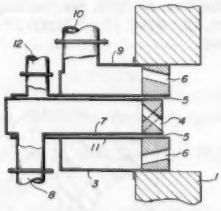
(i) means for vertical adjustment of said burner head in said opening.

4,281,984

METHOD OF HEATING A SIDE-BURNER TYPE HEATING FURNACE FOR SLAB

Zenjiro Kobayashi; Masaki Aihara, and Kuniaki Sato, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jul. 18, 1979, Ser. No. 58,739
Int. Cl.³ F27D *3/00, 13/00*
U.S. Cl. 432—9 **2 Claims**



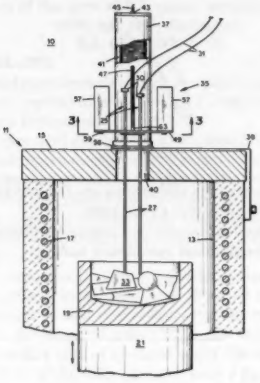
1. A method of heating slabs by the use of a side-burner type heating furnace having flame length-variable type burners on both side walls thereof, each burner consisting of an inner air flow nozzle, a fuel gas nozzle and an outer air nozzle arranged concentrically, the method comprising arranging the fuel gas nozzle of each burner between the inner air flow nozzle and the outer air flow nozzle thereof, and adjusting the ratio of the flow rate of air passing through the inner air flow nozzle to the flow rate of air passing through the outer air flow nozzle depending upon the variation of the flow rate of fuel gas.

4,281,985

AUTOMATIC THERMOCOUPLE POSITIONER FOR USE IN VACUUM FURNACES

David K. Mee, and Albert E. Stephens, both of Knoxville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 6, 1980, Ser. No. 156,955
Int. Cl.³ F27B *5/04*; G01K *1/08*; C22B *7/04*
U.S. Cl. 432—205 **9 Claims**



1. In a vacuum-furnace assembly including a casing, a furnace therein, and a crucible in said furnace, said crucible containing solids to be melted when said casing is evacuated to a low pressure, the improvement comprising:

an evacuated, vertically oriented bellows disposed in said casing and above said crucible, the upper end of said bellows being fixed and the exterior of said bellows being exposed to the atmosphere in said casing,

thermocouple-support means carried by the lower end of said bellows, and

a vertically extending sheathed thermocouple carried by said support and extending toward the mouth of said crucible, said thermocouple and support being coupled for relative vertical movement,

said bellows responding to pumpdown of said casing from atmospheric pressure to said pressure by expanding toward said crucible to effect (1) lowering of said support and thermocouple to a first position where said thermocouple rests on said solids and (2) further lowering of said support to a second position while said thermocouple rests on said solids.

4,281,986

DENTAL APPLIANCE

Norman R. Erickson, 1215 Felicita La., Escondido, Calif. 92025

Filed Sep. 14, 1979, Ser. No. 75,827
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—93 **16 Claims**

1. A collector member having a semi-rigid bite block portion adapted to be deformed upon the initial bite of the patient so as to form a mold thereof for secure placement within a patient's mouth and which bite block portion resists further deformation permitting a patient to exert substantial pressure on said bite block portion:

a combination tongue guard and collector membrane holder connected to said bite block portion which is adapted to be captured within a patients mouth, said combination tongue guard and collector membrane holder having means on its sides for detachably securing predetermined lateral edge surfaces of a collector membrane thereto:

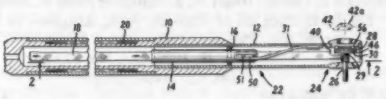
a flexible collector membrane that is substantially planar in its unassembled state having lateral edge surfaces, said collector membrane having laterally spaced first and second means for detachably securing said collector membrane to said bite block portion in order to pull said membrane into a preformed cup-shape configuration and to hold said membrane in such a configuration, said collector membrane having a cutout portion along its lateral edge between said first and second means for detachably securing said collector membrane to said bite block portion, said collector membrane in its assembled state having a preformed cup configuration produced by the lateral edges of said cut-out portion conforming to said means on the sides of said combination tongue guard and collector membrane holder, said membrane when in its assembled preformed cup configuration is adapted to be placed into its functional position within a patient's mouth to form a top of the mouth portion and a bottom of the mouth portion, the peripheral contour of the bottom of the mouth portion forms a sealing contact with the soft tissues overlying the mylohoid line of the mandible, and the lateral edges of the collector membrane where it is folded upwardly lies in sealing contact with tissue covering the internal walls of the ascending ramus of the mandible forming a reservoir for the collection of fluids and saliva generated, the top of the mouth portion of the collector membrane extends forwardly from the folded area over the palate where it conforms to and lies on the maxillary and palatal tissue thereby functioning to separate the mouth into a forward compartment that is being worked on and a rear compartment.

4,281,987

ULTRASONICALLY DRIVEN LOW-SPEED ROTARY MOTOR

Claus Kleesattel, Rego Park, N.Y., assignor to Cavitron Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,983
Int. Cl.³ A61C *1/07*
U.S. Cl. 433—103 **11 Claims**



1. An insert for a device having housing means for exciting longitudinal ultrasonic vibrations, the insert comprising:

a sleeve connectable to the housing means;

a shaft rotatably supported on the sleeve;

a disc normal to the shaft and connected to the shaft for rotation therewith;

a vibrator supported in the sleeve, the vibrator having transducer means at one end responsive to the housing means for producing longitudinal ultrasonic vibrations in the vibrator, and having driving tip means at the other end for converting the longitudinal vibrations into elliptical motion and for engaging one face of the disc with the elliptical motion so as to impart to the disc substantially only torque-generating vibrational thrusts tangential of the disc

for rotating the disc and vibrational thrusts normal to the disc; and

means for urging the driving tip means against the disc with a static pressure.

4,281,988

DENTAL HANDPIECE

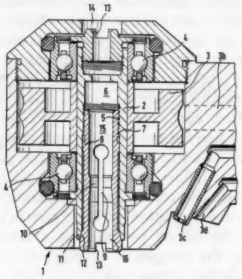
Eugen Eibofner, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voight GmbH & Co., Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 56,000

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832157

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—129 **6 Claims**



1. In a dental handpiece including a drive shaft rotatably supported interiorly thereof, said drive shaft being hollow at least at the operating end thereof and having an internal thread; and a tubular friction collet in the hollow space, having an external thread and evidencing in the inoperative condition thereof inwardly bent resilient tongues formed by a plurality of slits for the receipt and gripping of the shaft of an implement; the improvement comprising: the external thread of said friction collet being arranged at the implement-sided end thereof as in a threaded collet, said friction collet having an external conical surface and said hollow drive shaft an internal conical surface cooperating with said external conical surface, and wherein the internal conical surface of said hollow drive shaft widens to the shaft end at the implement-sided end region thereof, and the external conical surface of the friction collet widens at the implement-sided end region thereof towards that end of said collet.

4,281,989

ARTICULATED DENTAL HAND PIECE

Douglas L. Glover; Roger H. Rubenstein; Peter H. Douglas, and Lee R. Bridges, all of Phoenix, Ariz., assignors to The Idea Syndicate, Inc., Phoenix, Ariz.

Filed Jun. 25, 1979, Ser. No. 51,823

Int. Cl.³ A61C *1/12*

U.S. Cl. 433—130 **13 Claims**

1. An articulated dental hand piece, said articulated dental hand piece comprising in combination:

(a) a handle having a longitudinal axis for manually grasping and manipulating said dental hand piece;

(b) a head for rotatably supporting an air turbine driven burr;

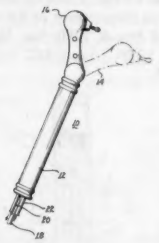
(c) arm means comprising a pair of mating members for articulatably interconnecting said handle and said head;

(d) pivot means disposed at the interconnctions between said handle, said head and said arm means for pivotally repositioning each of said handle and said head with respect to said arm means;

(e) conduit means for channeling an air flow from said handle, via said arm means and into said head for powering the burr supporting turbine, one member of said pair of members comprising a segment of said conduit means;

(f) further conduit means for channeling the air exhausted from the turbine, another member of said pair of members comprising a segment of said further conduit means;

(g) water conduit means for channeling a flow of water from



said handle, through said arm means and into said head for discharge in proximity to the burr;

whereby, said head is laterally and angularly positionable with respect to the longitudinal axis of said handle.

4,281,990

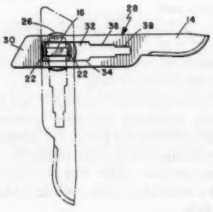
BLADE LOCKING MECHANISM

Steven G. Detsch, 4146 Bryan St., Oceanside, Calif. 92054

Filed Jan. 17, 1980, Ser. No. 112,740

Int. Cl.³ A61C *3/02*

U.S. Cl. 433—144 **5 Claims**



1. A blade locking mechanism for the end of a surgical instrument handle for attachment of slot mountable surgical blades to the service end of said surgical instrument handle comprising means located on the service end of said surgical instrument for mounting said surgical blades perpendicular to the service end of said surgical instrument, said mounting means comprising a cleat integrally formed in said handle service end and projecting from said handle service end surface for attaching said blade to said handle service end, said cleat comprising a base section and cleat horns formed at the projecting end of the base section with the axis of the horns lying in a plane perpendicular to said handle service end, said cleat horns being sized and shaped to pass through the slot in said blade when in line therewith but preventing withdrawal of said cleat horns from the slot of said blade by contacting the blade adjacent the slot in the slot mountable surgical blade when said blade is turned 90 degrees to said cleat horns, a threaded section on said handle service end adjacent to said cleat and a locking collar threadable on the threaded section to clamp a mounted blade between the locking collar and the underside of said cleat horns.

4,281,991

DENTAL PROSTHESES

Rudy Michl, and Peter Wollwage, both of Mauren, Steinbos, Liechtenstein, assignors to Perdent, GmbH, Schaan, Liechtenstein

Division of Ser. No. 543,532, Jan. 23, 1975. This application Jul. 20, 1978, Ser. No. 926,398

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1974, 2403211

The portion of the term of this patent subsequent to May 21, 1998, has been disclaimed.

Int. Cl.[3] **A61K** *6/08*

U.S. Cl. 433—202 **17 Claims**

1. A dental prosthesis having clear opalescence, resistance to abrasion and capable of being polished, comprising a hardened composition, comprising:

a first component comprising a monomeric binding material selected from a member of the group consisting of (a) long chain monomer esters of bisphenol A and glycidyl methacrylates, (b) adducts of diisocyanates and hydroxymethylacrylates, (c) difunctional esters of acrylic and methacrylic acids, and (d) mixtures of two, or of three of (a), (b) and (c), and

a second component comprising a micro-fine inorganic filler being present in an amount of about 50 to 90% based on the weight of said composition and having a particle size within the range of about 10 to 400 millimicrons and a BET surface area of less than about 200 m^2/g, wherein at least 50% of the filler particles have a particle size within the range of 10 to 40 millimicrons, in admixture with at least one bead or chip polymer of the group consisting of polyvinylchloride and copolymers thereof, polystyrene and copolymers thereof, polyamides, polymeric acrylates and polymeric methacrylates.

4,281,992

PROSTHETIC DENTURE PREPARED FROM POLYURETHANE ELASTOMER

Ralph W. Colpitts, Chesterfield, and Jens H. Wendt, Springfield, both of Mo., assignors to Polythetics, Inc., St. Louis, Mo.

Division of Ser. No. 13,159, Dec. 21, 1979, Pat. No. 4,225,696. This application Nov. 23, 1979, Ser. No. 96,680

Int. Cl.[3] **A61C** *13/00*

U.S. Cl. 433—212 **11 Claims**

1. An artificial denture comprising (1) a tooth holding portion integrally applied to (2) a mouth engaging portion, the tooth holding portion prepared from a hard, substantially non-hydrophilic polyurethane elastomer having a hardness of not less than about Shore D60, said hard elastomer consisting essentially of the reaction product of a polyether polyol and an aromatic polyisocyanate in which the isocyanate groups are bonded directly to the aromatic nucleus, the mouth engaging portion comprising a soft, substantially non-hydrophilic elastomer.

4,281,993

SEMICONDUCTOR LASER ALIGNMENT DEVICE

Bon F. Shaw, Winter Park, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 19, 1980, Ser. No. 150,874

Int. Cl.[3] **F41F** *27/00;* **F41G** *3/26*

U.S. Cl. 434—22 **12 Claims**

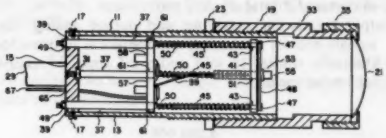
1. A semiconductor laser alignment device comprising in combination:

a tubular housing having at the back end thereof a rear end plate, said rear end plate having a trio of apertures located near the periphery thereof;

a weapon having a barrel, the barrel of said weapon being fixedly attached to the rear end plate of said tubular housing;

light source means located within said tubular housing adapted for broadcasting a laser light beam along an optical light path;

means threadably connected to the front end of said tubular housing adapted for collimating the laser light beam broadcast by said light source means; and



zeroing means mounted within said tubular housing and having said light source means connected thereto for positioning said light source means such that the laser light beam broadcast by said light source means is in alignment with the aiming direction of said weapon.

4,281,994

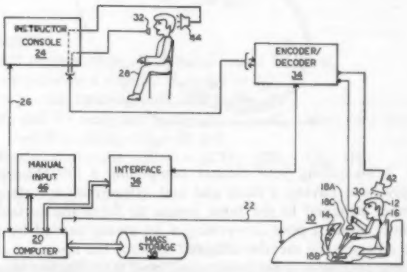
AIRCRAFT SIMULATOR DIGITAL AUDIO SYSTEM

Harold R. Dell, Menlo Park, Calif.; William L. Holtsman, Endwell, N.Y.; Michael V. Lamasney, San Jose, Calif., and Charles P. L. Mortimer, Binghamton, N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,297

Int. Cl.[3] **G01C** *21/00;* **H04M** *1/00*

U.S. Cl. 434—49 **8 Claims**



1. In a vehicle simulator for training an operator, having controls for manipulation by the operator and control means for providing cues back to the operator in response to said manipulation of said controls, apparatus for receiving a multitude of audible vocal instructions and information, digitally storing such instructions and information and playing back selected ones of said instructions and information in response to the manipulation of said controls by said operator, comprising:

a simulator cockpit having controls and instruments, means for providing electrical output signals representative of manipulation of said controls, and means for receiving electrical input signals for driving said instruments;

input means for receiving audio information and for providing input electrical analog signals representative of the said audio information;

encoding means for receiving said input electrical analog signals and converting said electrical analog signals into an input digital signal representative of said input audio information according to a preselected format;

storage means having a multiplicity of storage locations for storing said input digital signals; control means to operate in accordance with a predetermined flight profile program for providing said electrical input signals for driving said instruments, for controlling said apparatus, and for receiving and directing said input digital signals to selected ones of said multiplicity of storage locations to provide stored

digital signals, said stored digital signals being the same as said input digital signals, and for retrieving said stored digital signals from selected ones of said storage locations;

decoding means for receiving and converting according to said preselected format, said retrieved stored digital signals into output analog electrical signals representative of said stored digital signals; and

output means for receiving said output analog electrical signals and for providing audible vocal information substantially similar to said audio information received by said input means.

4,281,995

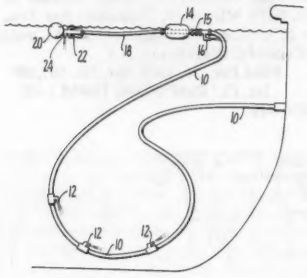
AUTOMATIC POOL CLEANERS

Andrew L. Pansini, 180 Los Cerros Dr., Greenbrae, Calif.

Continuation of Ser. No. 629,514, Nov. 6, 1975, abandoned, which is a continuation of Ser. No. 386,946, Aug. 9, 1973, abandoned, which is a continuation-in-part of Ser. No. 143,549, May 14, 1971, abandoned. This application Mar. 7, 1977, Ser. No. 774,683

Int. Cl.[3] B64C *21/06*

U.S. Cl. 440—38 **16 Claims**



1. A swimming pool cleaner comprising a flexible water supply hose having a fixed end and a free end, a surfacing member attached to the hose, means to drive the surfacing member about a pool comprising a jet means carried by the hose adjacent the member adapted to place the upstream part of the supply hose under tension, and pool wall cleaning means comprising a plurality of separate, spaced jet means mounted directly on the hose intermediate the ends thereof operable to constantly discharge jet streams substantially axially of said hose and thereby apply tension forces to respective upstream portions of the hose and, when said surfacing member is obstructed, to apply a compression force to the supply hose portion between said first mentioned and second mentioned jet means and thereby bend said supply hose portion and re-direct said first mentioned jet means to move said surfacing member in another direction.

6. A swimming pool cleaner comprising a flexible water supply hose having a fixed end and a free or distal end, water supply means attached to the fixed end, and water discharge transporter means attached to the distal end operable to move horizontally and vertically through the pool water and to tow the supply hose accordingly.

4,281,996

PROPELLER WITH A WATER-JET FOR CRAFTS

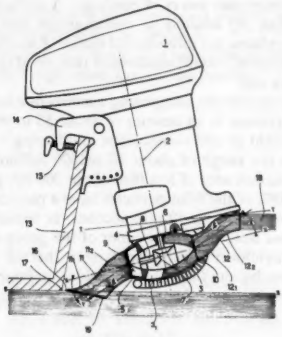
Michel Mouraret, 16, rue des Amouriers, Celleneuve, Montpellier (Herault), France

Filed Jan. 30, 1979, Ser. No. 7,716

Claims priority, application France, Feb. 1, 1978, 78 02794

Int. Cl.[3] B63H *23/32, 11/10*

U.S. Cl. 440—89 **1 Claim**



1. A water-jet propeller for a boat provided with an outboard having an output axis, the engine being capable of being swivelled, carrying means for securing the outboard engine to the stern of the boat, a propeller rigidly secured to the outboard engine, the propeller comprising a propulsion unit provided with an inlet aperture for water and an outlet aperture for water, a rotor for said propulsion unit, said rotor and apertures being arranged in axial alignment and perpendicular to the output axis of the outboard engine, inlet and outlet nozzles attached respectively to said inlet and outlet apertures, said nozzles making angles respectively that are substantially identical to one another in relation to said rotor axis of said propulsion unit while said angles are directed one of them above said rotor axis, the other beneath the same, an exhaust-pipe for said outboard engine, said exhaust pipe being parted into two legs each laterally positioned beneath the propulsion unit, said two legs joined together to form an exhausting aperture arranged beneath said propulsion unit and behind the inlet nozzle for the water.

4,281,997

PROCESS FOR THE GREASING OF LEATHER AND FUR SKINS

Kurt Rosenbusch, Frankfurt am Main, and Merten Schlingmann, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1980, Ser. No. 123,199

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907065

Int. Cl.[3] C14C *9/02*

U.S. Cl. 8—94.1 P 4 Claims

1. A process for greasing a material which is a leather or fur skin or a dyed leather or fur skin, which comprises treating, by batchwise exhaustion, said material at a temperature below boiling point and at normal pressure with a liquid formulation containing one or more phospholipids, each obtained by methanol fermentation with bacteria of *Pseudo Monas* species or with *Methylomonas Clara* and subsequently emulsified in water or chemically modified by conversion of functional groups present in said phospholipid into a water-solubilizing form or by introduction into the phospholipid of water-solubilizing groups, and then acidifying the treated material.

4,281,998

SOLVENT-RESISTANT ALKYLATED MELAMINE CROSS-LINKED CELLULOSE ESTER ARTICLES

Cephas H. Sloan, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1980, Ser. No. 117,918

Int. Cl.[3] D06M *1/00*

U.S. Cl. 8—129 10 Claims

1. Process for treating a cellulose ester article which comprises applying to the surface of said article a solution of an alkylated melamine wherein each of the alkyl groups contain from 1 to 4 carbon atoms and an acid catalyst, said solution being at a concentration and applied in an amount such as to result in a deposit of alkylated melamine in an amount of between about 1% and about 10% based on the weight of the cellulose ester article and said acid catalyst in an amount of from about 0.01 to about 1.0% based on the weight of the cellulose ester article, and applying heat to said article thereby causing a reaction to occur between the alkylated melamine and the surface of the cellulose ester article to form a cross-linked skin.

4,281,999

AQUEOUS DYE PREPARATIONS OF DYES DIFFICULTLY SOLUBLE IN WATER

Carl Becker, Basel, Switzerland; Georges Mahler, Sierentz, France, and Paul Erzinger, Liestal, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,777

Claims priority, application Switzerland, Dec. 29, 1977, 16184/77

Int. Cl.[3] C09B *1/00, 5/62, 67/00*

U.S. Cl. 8—527 15 Claims

1. An aqueous dyestuff composition, containing at least 10% by weight of water, 25 to 60% by weight of a finely dispersed dye which is difficultly soluble in water and is soluble in boiling perchloroethylene to the extent of less than 0.5 g/kg, an effective amount of a dispersing agent selected from the group consisting of anionic dispersing agents and non-ionic dispersing agents, and a resin which has affinity for the dye and which is more soluble than the dye in a solvent that is soluble in water to the extent of about 10 to 350 g/l, wherein the resin is a synthetic ketone resin and is present in an amount of 1 to 10% by weight, relative to the dye.

4,282,000

DYESTUFF SOLUTIONS, THEIR PREPARATION AND THEIR USE FOR DYEING PAPER

Manfred Groll, Cologne, and Friedhelm Müller, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

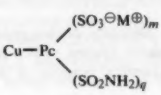
Filed Jan. 25, 1980, Ser. No. 115,529

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904928

Int. Cl.[3] C09B *47/08*

U.S. Cl. 8—527 9 Claims

1. Aqueous solutions of copper phthalocyaninesulphonic acid salts of the formula



(I)

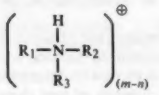
in which

Cu-Pc a copper phthalocyanine radical,

m a number from 1.8 to 3.0,

q a number from 1.0 to 2.0, with the proviso that the sum m+q is a number from 2.8 to 4.0, and

$M^{\oplus}$ a mixture of $A_n^{\oplus}$ and an ammonium ion of the formula



(II)

wherein

$A^{\oplus}$ represents an alkali metal ion or NH_4 ion,

n represents a number from 0.8 to 2.0,

m has the meaning indicated above,

R_1 and R_2 designate hydrogen, C_1—C_4—alkyl or a radical $-(CH_2-CH_2-O)_p-H$ and

R_3 designates the radical $-(CH_2-CH_2-O)_p-H$,

wherein

p is 1, 2, 3, 4, 5 or 6.

4,282,001

COMPOSITIONS AND METHOD FOR REDUCING TURBIDITY IN SAMPLES

Sigmar Klose, Berg; Herbert Buschek, Starnberg, and Helmut Schlumberger, Polling, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Waldhof, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 26,851

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816229

Int. Cl.[3] G01N *33/52, 33/66, 33/92*

U.S. Cl. 23— 230 B 12 Claims

1. Process for the removal of turbidity in aqueous reaction mixtures clouded by sample material, which method comprises adding to the reaction mixture

(a) at least one low molecular weight organic compound selected from the group consisting of aromatic condensed and non-condensed alcohols and amines; esters of aromatic acids and alkanoic acids; straight-chained, cyclic and branched aliphatic alcohols containing more than 3 carbon atoms; halogenated, short-chained aliphatic compounds; aliphatic ketones aldehydes; carboxylic acids; ethers; and benzene and

(b) at least one detergent which is capable of dissolving in the reaction mixture, in the absence of compound (a), to give a clear solution and capable of forming a sparingly soluble complex with said compound (a), and being selected from alkyl, aralkyl or alkylthio ether or an alkyl or aralkyl ester of a polyethylene oxide glycol containing 8

to 22 carbon atoms in the alkyl radical and 5 to 25 ethylene oxide units, in an amount sufficient to bring about the appearance of a precipitate of said complex, and then adding further detergent until the precipitated complex again dissolves.

4,282,002

SENSITIZED SHEEP STROMA IMMUNOASSAY FOR RHEUMATOID FACTOR

Rita C. Prodell, West Orange, N.J., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 6, 1979, Ser. No. 73,167
Int. Cl.[3] G01N *33/54*
U.S. Cl. 23—230 B **24 Claims**

20. The method for detection or determination of rheumatoid factors in human blood, plasma, serum or synovial fluid by means of the immunochemical reaction of said factors, which method comprises:

(1) admixing a predetermined amount of a neat or serially diluted sample of said blood, plasma, serum or fluid with a predetermined amount of an absorbing antigen capable of combining with heterophile antibodies in said blood, plasma, serum or synovial fluid;

(2) further admixing with mixture (1) a predetermined amount of a reagent having as its essential reactive component a supply of red cell stroma coated with a sensitizing agent, which sensitizing agent sensitizes red cell stroma for the detection or determination of said rheumatoid factors; and

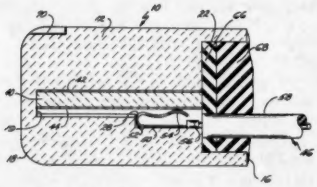
(3) detecting or determining the presence or extent of agglutination of the rheumatoid factors with said sensitized reagent (2), which detection or determination is a measure of the presence or quantity of said rheumatoid factors in said sample.

4,282,003

METHOD FOR CONSTRUCTING A SELF-REGULATING ELECTRIC HEATER

Michael A. Yashin, Foxboro, Mass., and Lucilio A. Rebelo, Pawtucket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 966,837, Dec. 6, 1978, Pat. No. 4,236,065. This application Jun. 18, 1980, Ser. No. 160,714
Int. Cl.[3] H01C *1/14;* H05B *3/02*
U.S. Cl. 29—619 **7 Claims**



1. A method for constructing an efficient, self-regulating heater comprising the steps of forming a body of electrically insulating ceramic material into an cylindrical configuration with an axially extending slot in communication with one end of the body and extending toward a closed end of the body, forming an axially extending groove in each of two walls of the body defining the slot, providing a stop surface in each groove intermediate the ends thereof, selecting a single resistor element generally complementary in configuration with the slot and only slightly smaller in volume than the slot, the element composed of ceramic PTC material and having spaced electrically conductive layers thereon, inserting the resistor element into the slot, injecting thermal transfer material between the resistor and walls of the body defining the slot, selecting two flat resilient electrical terminals having a selected dimension larger than the grooves but being compressable so as to fit within the grooves, sliding a terminal into each groove so that the terminals are in physical and electrical contact with the resistor element and disposing a seal at the said one end of the body with leads for the terminals extending through the seal.

4,282,004

PROCESS FOR AGGLOMERATING COAL

George P. Masologites, Columbus, N.C., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 20, 1978, Ser. No. 971,480
Int. Cl.[3] C10L *9/00*
U.S. Cl. 44—1 SR **15 Claims**

1. A method of agglomerating coal particles, a portion of the coal particles having a fine particle size comprising:

(1) separating at least part of the coal particles having a fine particle size to provide a first fraction of coal particles having a reduced coal fines content;

(2) contacting a slurry of coal particles of the first fraction with hydrocarbon oil to form coal-oil agglomerates; and

(3) recovering coal-oil agglomerates of reduced oil content.

5. A method of agglomerating coil particles, a portion of the coal particles having a fine particle size comprising:

(1) separating at least part of the coal particles having a fine particle size to provide (a) a first fraction of coal particles having a reduced coal fines content, and (b) a second fraction of coal particles having a fine size;

(2) agitating a slurry of coal particles of the first fraction, water and hydrocarbon oil to form coal-oil agglomerates;

(3) contacting an aqueous slurry of the coal-oil agglomerates with at least part of the coal particles from the second fraction; and

(4) recovering coal-oil agglomerates of reduced oil content.

11. A method of beneficiating coal containing ash and iron pyrite mineral matter comprising:

(1) reducing the coal size to form coal particles, and separating at least part of the coal particles having a fine particle size to provide (a) a first fraction of coal particles having a reduced coal fines content, and (b) a second fraction of coal particles having a fine size;

(2) contacting an aqueous slurry of the coal particles of reduced size from step 1 or as fractions (a) and (b) with a promoting amount of at least one conditioning agent capable of modifying or altering the existing surface characteristics of the pyrite under conditions to effectuate alteration or modification of at least a portion of the contained pyrite,

(3) contacting the slurry of coal particles of the first fraction with hydrocarbon oil to form coal-oil agglomerates;

(4) contacting the aqueous slurry of the coal-oil agglomerates with at least part of the coal particles from the second fraction; and

(5) recovering coal-oil agglomerates wherein the coal reduced iron pyrite and mineral content.

4,282,005

BODY WARMER FOR HEATING BY EXOTHERMIC HEAT

Masaharu Sato, and Michio Sugiura, both of Tokyo, Japan, assignors to Kensen Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 106,742
Claims priority, application Japan, Mar. 5, 1979, 54-27763[U]
Int. Cl.[3] F24J *1/00;* A61F *7/00*
U.S. Cl. 44—3 R **1 Claim**

1. A body warmer for heating a human body by exothermic heat comprising:

(a) an elongated air permeable paper bag for holding heat producing materials

(b) a sheath bag disposed around said air permeable bag; and,

(c) heat producing materials in said paper bag consisting of
about 20 parts of ferrosoferric oxide
about 25 parts of manganese dioxide
about 5 parts of magnesium oxide

about 2 parts of holmium oxide
about 4 parts of sodium chloride
about 2 to 15 parts of sugar-beat waste materials
about 1 part boron oxide
about 3 parts of pearlite
about 5 parts of carbon, and
about 40 parts of iron filings or iron dust.

4,282,006

COAL-WATER SLURRY AND METHOD FOR ITS PREPARATION

James E. Funk, Alfred Station, N.Y., assignor to Alfred University Research Foundation Inc., Alfred, N.Y.

Continuation-in-part of Ser. No. 957,166, Nov. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 790,337, Apr. 25, 1977, abandoned. This application Oct. 26, 1979, Ser. No. 88,815

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **40 Claims**

1. A coal compact comprising finely divided coal particles, characterized in that said coal compact comprises finely divided coal particles having a particle size in the range of 1180 μm to 0.05 μm with at least 5 wgt. % of the particles being of colloidal size, said particles in said compact having a particle size distribution substantially in accordance with the following formula:

$$CPFT = \left[\frac{D_\mu^n - D_S^n}{D_L^n - D_S^n}\right] \cdot 100, \text{ where}$$

$CPFT$ = cumulative weight percent, dry basis, of particles finer than a particle μ of stated size,
D_μ = diameter of particle μ,
D_L = diameter of largest particle in compact, sieve size or its equivalent, being from 38 to 1180 μm,
D_S = diameter of smallest particle in compact, SEM size or its equivalent, being from 0.05 to 3 μm,
n = numerical exponent, with n being in the range of 0.2 to 0.7, and with all diameters sized in μm

wherein, when said compact is admixed with dispersing agent and a sufficient amount of water to produce a suspension containing at least about 60 weight percent of said coal and at least about 20 weight percent of said water, said suspension has a Brookfield viscosity at 60 revolutions per minute of less than 4000 centipoise.

4,282,007

NOVEL FUEL COMPOSITION CONTAINING ALCOHOL

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,528

Int. Cl.³ C10L *1/22, 1/18*

U.S. Cl. 44—53 **19 Claims**

1. A fuel composition for internal combustion engines comprising

(a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0–50 volumes per volume of alcohol; and

(b) a minor corrosion inhibiting amount of, as a corrosion inhibiting agent, a reaction product of (i) C_{15}–C_{30} hydrocarbyl succinic acid anhydride and (ii) aminotriazole.

4,282,008

NOVEL FUEL COMPOSITION CONTAINING ALCOHOL

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,529

Int. Cl.³ C10L *1/18, 1/22*

U.S. Cl. 44—53 **28 Claims**

1. A fuel composition for internal combustion engines comprising

(a) a major portion of a fuel containing (i) at least one alcohol selected from the group consisting of ethanol and methanol and (ii) gasoline in amount of 0–50 volumes per volume of alcohol; and

(b) a minor corrosion inhibition amount of, as a corrosion inhibiting agent, a reaction product of (i) an aminotriazole, (ii) an isatoic anhydride, and (iii) a C_3–C_{12} poly-primary amine bearing at least one free —NH_2 group and at least one —NHR′ group wherein R′ is a C_{12}–C_{18} hydrocarbon group.

4,282,009

ROTATING FLUIDIZED BED GASIFIER SYSTEM

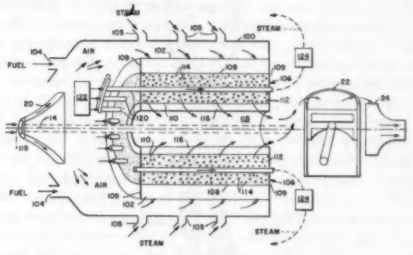
William H. Belke, Peoria; Alexander Goloff, East Peoria, and George B. Grim, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00929, § 371 Date Nov. 1, 1979, § 102(e) Date Nov. 1, 1979, PCT Pub. No. WO81/01295, PCT Pub. Date May 14, 1981

This PCT application filed Nov. 1, 1979, Ser. No. 99,136

Int. Cl.³ C10J *3/56*

U.S. Cl. 48—61 **6 Claims**



1. A rotating fluidized bed gasifier system for endothermically reacting steam and carbon comprising:

a. an outer substantially cylindrical elongated perforated wall (**108**);

b. an inner substantially cylindrical perforated wall (**110**) spaced apart and substantially coaxial and co-extensive with said outer perforated wall (**108**);

c. enclosing walls (**109**) defining within said outer and inner perforated walls (**108, 110**) a substantially annular fluidization chamber (**112**);

d. a fluidizable bed of pulverulent solid particles (**114**) in said chamber (**112**), said particles comprising a minor proportion of carbon particles and a major proportion of inert particles;

e. means (**111**) for rotating said chamber (**112**) about the axis (**119**) to cause the particles to centrifugally gravitate toward said outer perforated wall (**108**);

f. means (**20, 104, 102**) for feeding a combustible fuel in a gaseous agent stream into said chamber (**112**) through said outer perforated wall (**108**), said fuel reacting with at least a portion of said gaseous agent in said chamber (**112**) to generate heat and to form gaseous combustion products, any unreacted gaseous agent and said gaseous combustion products exiting said chamber (**112**) through said inner perforated wall (**110**);

g. means (**105,102**) for introducing steam through said outer

perforated wall (**108**) into said chamber (**112**), said steam reacting with at least a portion of said carbon particles in said chamber (**112**) to form gaseous reaction products, said gaseous reaction products exiting said chamber (**112**) through said inner perforated wall (**110**);

h. means (**120**) for maintaining at least a portion of said particles (**114**) in said chamber (**112**) at a temperature conducive to said steam-carbon reaction;

i. means (**116**) for receiving said gaseous reaction products, gaseous combustion products, unreacted gaseous agent and unreacted steam exiting from said chamber (**112**) through said inner perforated wall (**110**); and

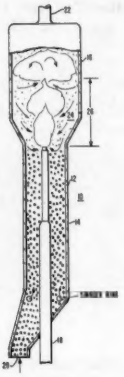
j. means (**118**), communicating with said means (**116**) for receiving, for directing said unreacted steam, unreacted gaseous agent, gaseous combustion products and gaseous reaction products exiting said inner perforated wall (**110**) away from said chamber (**112**).

4,282,010

FLUIDIZED BED INJECTION ASSEMBLY FOR COAL GASIFICATION

Peter Cherish, Bethel Park, and Louis A. Salvador, Hempfield Township, Westmoreland County, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1979, Ser. No. 58,237
Int. Cl.³ C10J *3/68*
U.S. Cl. 48—77 **1 Claim**



1. In a fluidized bed coal gasification reactor system including an elongated vertically disposed vessel having a cylindrical lower body and an enlarged cylindrical upper body, and a sparger ring disposed at the lower end of said lower body, wherein solid combustibles in a transport gas, an oxidizing gas and a fluidization and cooling gas flow into said vessel to intermediately produce char and ultimately produce a combustible product gas and ash, the improvement comprising:

(a) means for transporting said combustibles and transport gas, said means including a fixed vertical inner tube extending upwardly into said vessel and being open at its upper discharge end;

(b) means for transporting said oxidizing gas, said means for transporting said oxidizing gas including a fixed vertical intermediate tube extending upwardly into said vessel and surrounding said inner tube so as to form an inner annulus, said intermediate tube being open at its upper discharge end; and,

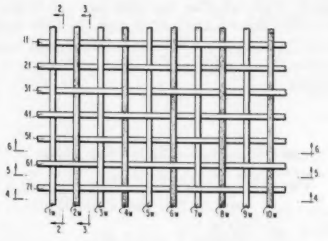
(c) means for transporting said fluidizing and cooling gas, said means for transporting said fluidizing and cooling gas including a fixed vertical outer tube extending upwardly into said vessel and having a tubular wall, said outer tube surrounding said intermediate tube so as to form an outer annulus, said outer tube having means for sealing its upper end and means for radially discharging said fluidizing gas said sealing means comprising a truncated conical transition between said outer tube and said intermediate tube, said transition forming a slip fit with respect to said intermediate tube, a seal ring affixed radially about the exterior of said intermediate tube, and a packing disposed within said outer annulus above said sealing ring, said packing completely filling the volume of said outer annulus bounded by said seal ring and said truncated conical transition, said radial discharge means including apertures disposed radially through said tubular wall at an elevation within said lower body above said sparger ring.

4,282,011

WOVEN FABRICS CONTAINING GLASS FIBERS AND ABRASIVE BELTS MADE FROM SAME

John M. Terpay, Danville, Va., assignor to Dan River Incorporated, Danville, Va.

Filed May 30, 1980, Ser. No. 154,996
Int. Cl.³ B24D *3/00, 11/00*
U.S. Cl. 51—298 **13 Claims**



1. A woven fabric comprising glass fibers which are cushioned from each other along their length by organic fibers, the sinuosity of the glass fibers being less than or equal to the sinuosity of the organic fibers in a given length of the woven fabric, and organic fibers in the direction generally transverse to said glass fibers.

4,282,012

COMPOSITION FOR THE MANUFACTURE OF ABRASIVE TOOLS

Viktor A. Lobachev, ulitsa Z. Kosmodemianskoi, 4, kv. 4, Khimki, Moskovskaya oblast; Vladimir G. Safronov, Kronshtadtsky bulvar, 43, korpus 3, kv. 283, Moscow; Faina B. Danilova, ulitsa B. Uchitelskaya, 10, kv. 10, poselok Vodniki, Moskovskaya oblast, and Vladimir N. Lvov, ulitsa Obrucheva, 5, korpus 1, kv. 10, Moscow, all of U.S.S.R.

Filed Feb. 5, 1979, Ser. No. 9,743
Claims priority, application U.S.S.R., May 14, 1978, 2608953
Int. Cl.³ B24D *3/02*
U.S. Cl. 51—309 **15 Claims**

1. In a composition for the manufacture of abrasive tools consisting essentially of abrasive powders, metal powders and a binding agent, wherein the improvement comprises, the binding agent is a solid caustic alkali selected from the group consisting of potassium hydroxide and sodium hydroxide separately or in combination, the components being present in the following proportions, in percent by volume:

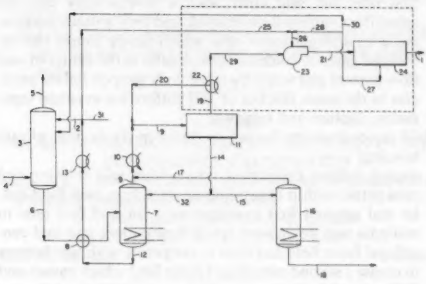
abrasive powders	12.5 to 37.5
metal powders	25.0 to 62.5
caustic alkali[s]	12.5 to 50.0.

4,282,013

VACUUM PUMP OPERATION IN A MALEIC ANHYDRIDE RECOVERY SYSTEM

Frederick C. Franklin, Pinole, and Stephen G. Paradis, Fairfax, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Nov. 14, 1977, Ser. No. 851,248
Int. Cl.[3] B01D *19/00*
U.S. Cl. 55—48 1 Claim



1. A method for increasing the yield and reducing mechanical vacuum pump fouling from precipitated maleic anhydride in a continuous process for preparing maleic anhydride by vapor phase oxidation of a hydrocarbon feedstock followed by absorption of the maleic anhydride by a liquid organic absorbent therefor in an absorption zone and then stripping of the maleic anhydride from the organic absorbent under reduced pressure conditions, wherein a mechanical vacuum pump means is employed to develop said reduced pressure conditions in said stripping zone of said process, the improvement in recovery of residual maleic anhydride which comprises:

(a) flowing vapors containing said residual maleic anhydride from said stripping zone to the central portion of a liquid-ring seal vacuum pump constituting said mechanical pump means;

(b) concurrently flowing at least a portion of said stripped organic absorbent into the circumferential ring portion of said liquid-ring seal vacuum pump to form the liquid-ring seal and working liquid of said pump;

(c) continuously mixing said vapors with said stripped organic absorbent to form a liquid maleic anhydride-rich organic absorbent phase and a gaseous disposables phase;

(d) withdrawing the resultant liquid maleic anhydride-rich organic absorbent phase and reduced gaseous disposables phase from said pump;

(e) separating said gaseous disposables phase from said liquid maleic anhydride-rich organic absorbent phase and venting said separated gaseous disposables phase;

(f) passing a portion of said liquid maleic anhydride-rich organic absorbent phase to said absorption zone of said process to recycle said maleic anhydride;

(g) passing the remainder of said liquid maleic anhydride-rich organic absorbent phase into the circumferential ring portion of said pump to maximize the concentration of maleic anhydride therein;

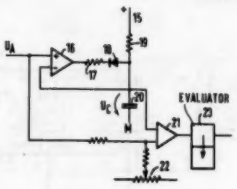
whereby said method substantially eliminates vapor phase maleic anhydride from said gaseous disposables phase and from contact with portions of said mechanical vacuum pump exposed to ambient atmospheric conditions.

4,282,014

DETECTOR FOR DETECTING VOLTAGE BREAKDOWNS ON THE HIGH-VOLTAGE SIDE OF AN ELECTRIC PRECIPITATOR

Heinrich Winkler, Nuremberg; Gerhard Rumold, Bubenreuth, and Helmut Schummer, Heusenstamm, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 870,627, Jan. 19, 1978, abandoned. This application May 21, 1979, Ser. No. 40,525
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1975, 2504084
Int. Cl.[3] B03C *3/66*
U.S. Cl. 55—105 4 Claims



1. In a detector for detecting voltage breakdowns on the high-voltage side of an electric precipitator coupled to the detector, the voltage of the precipitator being supplied from an a-c network through a thyristor control circuit coupled to said a-c network, a high-voltage transformer coupled in series relationship to said thyristor control circuit, and a rectifier coupled in series relationship to said high-voltage transformer, said precipitator being coupled in series relationship to said rectifier, and said detector continuously comparing characteristic parameters of successive half-waves of periodical variations of the voltage at the precipitator, a predetermined deviation between successive characteristic parameters being a criterion for determining a breakdown of the precipitator voltage, the improvement comprising said detector including means for detecting a decrease of the precipitator voltage below a minimum value of the periodical precipitator voltage during continuous operation of said precipitator, said decrease of said precipitator voltage below said minimum value comprising said criterion for determining a breakdown of said precipitator voltage.

4,282,015

METHOD OF AND APPARATUS FOR REGENERATING AN ADSORPTION AGENT

Ernst Bartoschek, Leitershofen, and Emil Christof, Augsburg, both of Fed. Rep. of Germany, assignors to Böwe Maschinenfabrik GmbH, Augsburg, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,830
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820771
Int. Cl.[3] B01D *53/04*
U.S. Cl. 55—179 1 Claim

1. An adsorber apparatus, especially for machines with organic solvents, comprising:

a pair of functionally interchangeable adsorbers each having a body of adsorbent, a first side for an air/vapor mixture to traverse the respective body, and a second side for air freed from said vapor upon traversal of the body;

a first and second valve respectively connecting said first side and said second side of each of said adsorbers in a closed air/vapor circulating path whereby the first and second valves of one of said adsorbers are closed for regeneration thereof when the first and second valves of the other adsorber are open for the removal of vapor therein;

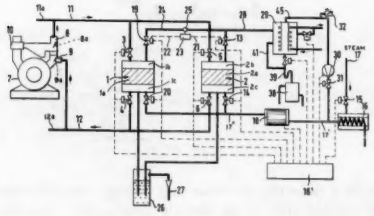
a respective third valve connected to the first side of each

adsorber and a respective fourth valve connected to the second side of each adsorber for passing steam therethrough upon regeneration of the respective adsorber;

a condenser connected to said adsorbers through said third valves;

a source of regenerating steam connectible to said adsorbers through said fourth valves;

means for communicating between said third valves of said adsorbers to permit steam admitted to one of said adsorbers to drive vapor-carrying air from said one of said adsorbers into the other of said adsorbers during the admission of steam to said one of said adsorbers for the regeneration thereof and for blocking communication between said adsorbers upon the displacement of air from said one of said adsorbers by the steam in response to an elevated temperature;



a blower connected to said condenser;

an air heater connected to said blower; and

means connecting said air heater to said adsorber through said fourth valves, said condenser being provided with a controllable air-blocking device open only over a portion of the drying period for a regenerated adsorber with heated air, said device comprising

a tube extending downwardly in said condenser to a location close to the bottom thereof and internally connected to said blower,

a valve connecting the bottom of said condenser to a water separator,

a cooling coil surrounding said tube and having a water inlet pipe and a water outlet pipe, and

a further valve connecting said water outlet pipe with the interior of said condenser outwardly of said tube.

4,282,016

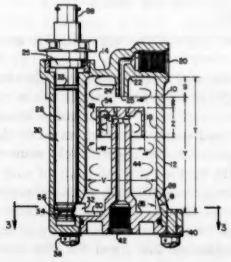
GAS AND FAILURE PARTICLE SEPARATOR SYSTEM

Thomas E. Tauber, Lansdowne, and George E. Chapman, Woodlyn, both of Pa., assignors to Technical Development Co., Glenolden, Pa.

Continuation-in-part of Ser. No. 8,526, Feb. 1, 1979, abandoned. This application Feb. 29, 1980, Ser. No. 126,102

Int. Cl.[3] **B01D** *35/14, 45/16, 19/00*

U.S. Cl. 55—204 **4 Claims**



1. In the pressurized lubrication system for mechanical drives, a particle separator adapted to remove entrapped gases and to separate failure particles from wear particles and segregate them for subsequent removal comprising:

a cylindrical housing having a smooth inner wall;

a fluid inlet adapted to tangentially inject the fluid into said housing;

a gas removing means having an outlet in the top of said housing;

a first hollow cylindrical tube within said housing and concentric with it depending downward from said gas outlet and adapted to cooperate with said fluid inlet such that when the fluid is injected into the annulus between said first tube and said inner wall, a downwardly directed spiral flow pattern is developed, said flow pattern generating a centrifugal force field which firstly causes the entrapped gases to coalesce substantially in the center of said flow pattern and secondly selectively propels failure particles to the outer reaches of said pattern for eventual separation, capture and removal;

fluid removal means having an outlet in the bottom of said housing;

a second hollow cylindrical tube within said housing and concentric with it depending upward from said fluid outlet and adapted first to cooperate with said first tube to maintain said downward spiral flow pattern and said centrifugal force field and then to cooperate with said bottom to create a second centrifugal force field which causes said failure particles to be selectively propelled to and kept at the bottom of said housing from which location they are cpatured for removal;

means adapted for receiving said separated failure particles connected to said housing whereby they are segregated and trapped for subsequent removal from the system; and

means for detecting and indicating the presence of failure particles, connected to said receiving means.

4,282,017

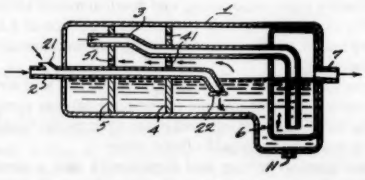
AUTOMOBILE DIRTY SMOKE ELIMINATOR

Hsi-Chi Chen, 435-8 Peitun Rd., Taichung City, Taiwan

Filed Sep. 12, 1979, Ser. No. 74,892

Int. Cl.[3] **B01D** *47/02*

U.S. Cl. 55—247 **5 Claims**



1. An exhaust purifier for use in connection with an internal combustion engine of a vehicle comprising:

an outer tank for holding a quantity of water, having a front wall and a rear wall horizontally spaced from said front wall;

at least one vertically extending inner wall separating a portion of said tank into an inlet chamber, and at least one intermediate chamber;

a containment means including a containment wall inside said tank defining a discharge chamber, said inlet chamber and at least one intermediate chamber communicating with each other so that said quantity of water maintains a same level in all of said inlet and intermediate chambers, said at least one inner wall having small openings above said water level for transmitting said exhaust gases between said inlet chamber and said at least one intermediate chamber;

a first conduit for delivering exhaust gases from said internal combustion engine into said outer tank, having a first

outlet port in said inlet chamber; said first outlet port being inclined to the horizontal;

a rotary blade having a substantially vertical axis of rotation formed at said first outlet port, said first port and blade being submerged in said water when said quantity of water is disposed in said tank, said blade being disposed so that said exhaust gases turn said blade to mix said gases with said water; and

a second conduit for delivering gases from said at least one intermediate chamber to said discharge chamber; said second conduit having an inlet in one of said at least one intermediate chamber above said water level and an outlet port in said discharge chamber beneath said water level;

said rear wall having an opening therein;

said discharge communicating with the outside atmosphere through said opening in said rear wall above said water level.

4,282,018

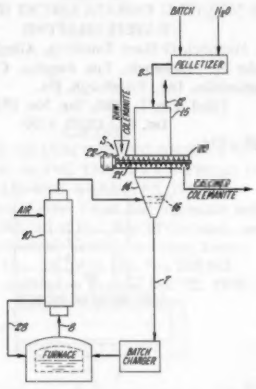
GLASS MANUFACTURING PROCESS WITH IN-SITU COLEMANITE CALCINATION

Magnus L. Froberg, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 7, 1980, Ser. No. 137,684

Int. Cl.³ C03B *1/00, 3/00;* **C03C** *1/02, 3/08*

U.S. Cl. 65—27 **4 Claims**



1. In a process for manufacturing a B_2O_3 and CaO containing glass comprising converting glass forming batch ingredients, including calcined colemanite, into agglomerates, heating a bed of said agglomerates in chamber by direct contact with gaseous combustion products so as to produce heated, non-aggregated agglomerates and supplying said agglomerates to a glass melting furnace, the improvement comprising passing raw colemanite through said chamber and in indirect heat exchange relation to said combustion products so as to heat said raw colemanite to a temperature in excess of its decrepitation temperature and withdrawing said heated colemanite from said chamber.

4,282,019

GLASS MANUFACTURING PROCESS WITH IN-SITU COLEMANITE CALCINATION AND POLLUTION ABATEMENT FEATURES

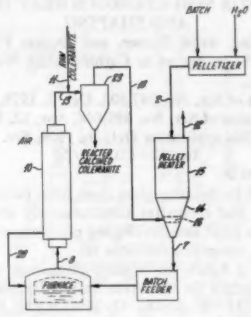
Charles S. Dunn, Pataskala, and Mark A. Propster, Gahanna, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 12, 1980, Ser. No. 149,097

Int. Cl.³ C03B *3/00*

U.S. Cl. 65—27 **6 Claims**

4. In a process for producing a calcia and boric oxide containing glass, said glass optionally containing fluorine, in a combustion fired melter comprising, converting glass forming batch ingredients, including calcined colemanite, into agglomerates, heating a bed of said agglomerates in a chamber by direct contact with flue gases so as to produce heated, non-aggregated agglomerates, said gases originating in said melter and containing boron values and also fluorine when said glass contains fluorine and having been cooled in a heat exchanger



prior to said direct contact heating, and supplying said heated agglomerates to said melter, the improvement comprising introducing raw colemanite into said flue gases prior to heating said bed with said gases and allowing said raw colemanite to form a solid, boron reacted, and, when present, fluorine reacted, calcined colemanite, and separating said calcined colemanite from said gases prior to heating said bed with said gases.

4,282,020

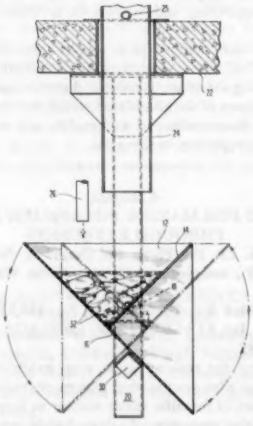
METHOD OF USING A WASTE GLASS COLLECTOR AND CULLET DUMPER

Frank H. Wheaton, Millville, N.J., assignor to Wheaton Industries, Millville, N.J.

Filed Nov. 25, 1977, Ser. No. 854,669

Int. Cl.³ C03B *5/16*

U.S. Cl. 65—28 **2 Claims**



1. Method for collecting molten waste glass cullet and dumping same in hardened lump form, said method comprising permitting said molten glass stream to fall into and simultaneously introducing water to one of a pair of adjacent pivotally mounted bins, said bins being adapted for reciprocal pivotal movement between alternative limit positions wherein one of said bins is upwardly facing to receive the molten glass or

water and the other of said bins is in position to dump the contents thereof, said bins further being adapted to be pivoted to the alternative limit position by the weight of glass and water in the upwardly facing bin.

4,282,021

METHOD OF MAKING PHOTOCHROMIC GLASSES SUITABLE FOR SIMULTANEOUS HEAT TREATMENT AND SHAPING

Jean P. Mazeau, Avon, France, and Thomas P. Seward, III, Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 947,502, Oct. 2, 1978, abandoned, which is a division of Ser. No. 895,646, Apr. 12, 1978, Pat. No. 4,130,437. This application Oct. 26, 1979, Ser. No. 88,546

Int. Cl.³ C03C *3/26*

U.S. Cl. 65—30 R **4 Claims**

1. A method for forming glass sheet from potentially photochromic glass and thereafter simultaneously shaping articles from said glass sheet and developing photochromic properties therein which comprises the steps of:

(a) melting a batch for a glass consisting essentially, in weight percent on the oxide basis, of about 57.1–65.3% SiO_2, 9.6–13.9% Al_2O_3, 12–22% B_2O_3, 1–3.5% Li_2O, 3.7–12% Na_2O, 0–5.8% K_2O, 6–15% total of $Li_2O+Na_2O+K_2O$, the molar ratio $Li_2O:Na_2O+K_2+K_2O$ not exceeding 2:3, 0.15–0.7% PbO, 0.12–0.18% Ag, 0.2–1% Cl, 0.06–0.13% Br, 0–2.5% F, and 0.002–0.02% CuO, the Ag, Cl, and Br ranges representing values as analyzed in the glass;

(b) adjusting the temperature of at least one region of the glass melt to provide a viscosity therein of about 10^4–10^6 poises;

(c) drawing the glass melt at a viscosity of about 10^4–10^6 poises directly past platinum or platinum-clad refractory forming means to produce potentially photochromic drawn glass sheet of optical quality, said glass exhibiting good resistance to surface crystal growth in contact with platinum such that over a contact period of 30 days the growth of a crystalline layer will not exceed 10 microns in thickness;

(d) cooling the glass sheet below the softening point of the glass and cutting articles of desired geometries therefrom;

(e) edge supporting said articles on alveolated molds; and then

(f) heating said articles at a temperature between about 610°–660° C. for a period of time sufficient to simultaneously sag the glass to a desired curvature into the concave portions of the alveolated molds, but not into contact with the inner surface of said molds, and develop photochromic properties in the glass.

4,282,022

METHOD FOR MAKING POLARIZING GLASSES THROUGH EXTRUSION

Kuang-Hsin K. Lo, Big Flats, and Daniel A. Nolan, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,537

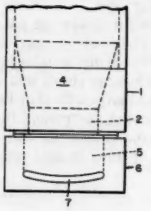
Int. Cl.³ C03B *17/06;* **C03C** *3/26*

U.S. Cl. 65—85 **9 Claims**

9. A method for making glass strip exhibiting polarizing properties from silver-containing glasses characterized as containing particles of metallic silver and/or as being photochromic through the presence of silver halide particles therein selected from the group of AgCl, AgBr, and AgI, said strip having a concavo-convex configuration across the width thereof and a linear curvature therein, which comprises the steps of:

(a) extruding said glass at an elevated temperature between about the annealing and softening points of the glass at an applied pressure of at least 3000 psi to elongate said metallic silver and/or silver halide particles to an aspect ratio of at least 2:1 and align them in the direction of glass flow, said extrusion being carried out utilizing a die structure having a curved slot orifice;

(b) passing said glass into a channel having a cross-sectional configuration similar to that of said curved slot orifice and



having a bend therein to form a glass strip having a concavo-convex configuration across the width thereof and a linear curvature therein; and then

(c) subjecting said glass strip to conditions sufficient to inhibit respheroidization of the elongated particles.

4,282,023

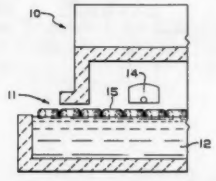
GLASS MELTING ENHANCEMENT BY TOROIDAL BATCH SHAPING

Joseph J. Hammel, O'Hara Township, Allegheny County, Pa., and John D. Mackenzie, Los Angeles, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1980, Ser. No. 174,469

Int. Cl.³ C03B *5/00*

U.S. Cl. 65—134 **8 Claims**



1. In a method for melting glass wherein particulate glass batch materials are fed into a heated enclosure, where the batch floats on the surface of a pool of molten glass therein until the batch becomes liquefied, the improvement comprising feeding the batch into the enclosure in the form of toroidally shaped aggregates whereby run-off of liquified batch from the unmelted mass of batch into the pool of molten glass is enhanced.

4,282,024

APPARATUS FOR MAKING POLYCRYSTALLINE ARTICLES

Stephen M. Copley, Palos Verdes Estates; Virendra V. S. Rana, Los Angeles, and James M. Whelan, La Canada, all of Calif., assignors to The University of Southern California, Los Angeles, Calif.

Division of Ser. No. 936,540, Aug. 23, 1978, abandoned, which is a division of Ser. No. 827,279, Aug. 24, 1977, Pat. No. 4,146,379. This application Sep. 13, 1979, Ser. No. 75,308

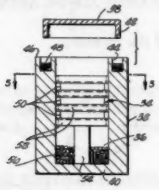
Int. Cl.³ C03B *19/06*

U.S. Cl. 65—144 **15 Claims**

1. Apparatus for densifying at least one compact comprising powder to be densified mixed with a sintering aid therefor, under changing pressure conditions in response to a change in temperature applied to said apparatus, comprising:

a vessel having a cavity;

means for defining in said cavity a specimen section for containing a compact to be densified and a reservoir section containing atmosphere material for providing overpressure during sintering to aid in densification, said sections being in communication with each other, said atmo-



sphere material having a melting point greater than the temperature required to outgas said compact but less than the temperature at which said sintering aid evaporates rapidly from said compact; and

seal means for containing a liquid seal against atmosphere for said cavity.

4,282,025

CARRIAGE FOR TRANSPORTING SHEETS OF GLASS AND FOR PLACING THEM IN A PRESS FOR IMPARTING A CONVEX SHAPE

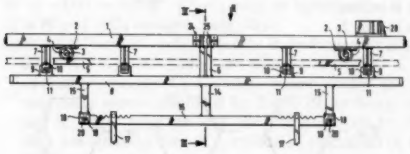
Mario Roth, Aachen; Werner Pagel, Herzogenrath, and Gunther Schmidt, Richterich, all of Fed. Rep. of Germany, assignors to Saint Gobain Industries, Neuilly-sur-Seine, France

Filed Dec. 21, 1979, Ser. No. 105,913

Claims priority, application France, Dec. 22, 1978, 78 36188

Int. Cl.³ C03B *23/03*

U.S. Cl. 65—273 **4 Claims**



1. A device for transporting a sheet of glass through a furnace having a plurality of sheet processing stations including a sheet convexing station having movable forms for pressing a sheet of glass into a convex shape and where said device comprises a carriage movably mounted on a rail extending above said furnace with said carriage having a carrying frame including a first rigid unitary horizontal longitudinal member supporting a plurality of sheet hangers; the improvement comprising in that said carriage has a coupling member at its middle adapted to couple with a coupling member positioned at said convexing station to anchor and position said carriage with respect to said convexing station; in that said first horizontal longitudinal member is longitudinally and vertically rigidly connected at its center portion to said carriage, and in that horizontal sliding means are provided for slidably connecting other portions of said first horizontal longitudinal member with respect to said carriage.

4,282,026

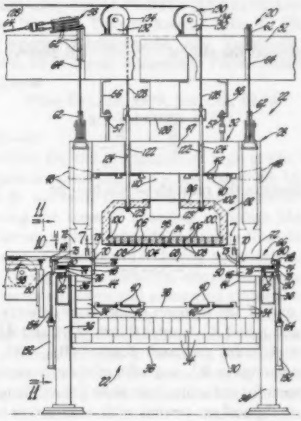
APPARATUS FOR BENDING AND TEMPERING GLASS

Harold A. McMaster, 707 Riverside Dr., Woodville, Ohio 43469; Norman C. Nitschke, 9102 Buck Rd., and John S. Nitschke, 324 E. Second, both of Perrysburg, Ohio 43551

Continuation of Ser. No. 872,201, Jan. 25, 1978, abandoned. This application Feb. 5, 1980, Ser. No. 118,822

Int. Cl.³ C03B *23/025*

U.S. Cl. 65—273 **18 Claims**



1. Apparatus for bending and tempering glass sheets comprising: a heating chamber for heating glass sheets to a sufficiently high temperature to permit tempering thereof; a conveyor for conveying glass sheets through the heating chamber; a holder for receiving a heated glass sheet from the conveyor; said holder having a downwardly facing surface of a predetermined shape against which a differential gas pressure supports the heated sheet of glass received from the conveyor in preparation for bending; a mold having a generally open center and a curved shape over at least a substantial portion thereof with a greater curvature than said predetermined shape of the holder surface; means for providing relative movement between the mold and the holder such that the mold is positioned below the holder to receive the heated glass sheet at tempering temperature from the holder for substantial sag bending of the glass sheet on the mold solely under gravity; a quench unit for tempering bent glass sheets; and an actuator for moving the mold from the holder to the quench unit in a time to control the extent of bending before tempering of the glass sheet.

4,282,027

TRI/PENTA/AZA-TETRACYCLO-DODECA/ENES/DIENES OR DIECAENES

Rolf Platz, Mannheim; Werner Fuchs, Ludwigshafen; Norbert Rieber, Mannheim; Ulf-Rainer Samel, Mutterstadt; Johann Jung, and Bruno Wuerzer, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

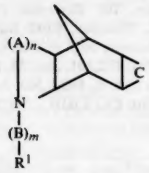
Division of Ser. No. 781,767, Mar. 28, 1977, Pat. No. 4,189,434. This application Jan. 16, 1980, Ser. No. 112,436

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615878

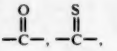
Int. Cl.³ C07D *487/04*

U.S. Cl. 71—76 **3 Claims**

1. A polycyclic nitrogen-containing compound of the formula



where A denotes the radical —N=N—, B denotes the radicals —SO_2—,



—S—, C denotes the radicals —N=N— or

n denotes one of the integers 0 and 1, m denotes one of the integers 0 and 1, and R^1 denotes thiazol-2-yl, and R^2 and R^3 are identical or different and each denotes $(B)_m$—R^4, R^4 having the same meanings as R^1, and salts of these compounds.

2. A process for reducing crop plant growth height wherein the plants or the soil are treated with an effective amount of a polycyclic nitrogen-containing compound of the formula of claim 1 to reduce crop plant growth height.

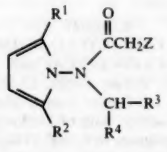
4,282,028

HERBICIDAL AND PLANT-GROWTH-REGULATING N-SUBSTITUTED-N-(2,5-DIALKYLPYRROL-1-YL) HALOACETAMIDES

Stephen D. Ziman, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 25, 1979, Ser. No. 60,320
Int. Cl.³ A01N *43/78*; C07D *277/22*
U.S. Cl. 71—90 **5 Claims**

1. A compound according to the formula (I):



(I)

wherein R^1 and R^2 are alkyl of 1 to 3 carbon atoms or halo; R^3 is hydrogen or alkyl of 1 to 3 carbon atoms; Z is halo; and R^4 is a 1,3-thiazole ring optionally substituted on a ring carbon atom with an alkyl group of 1 to 4 carbon atoms or phenyl.

5. A method for killing vegetation which comprises applying to said vegetation or its growth environment an herbicidally effective amount of the compound of the formula defined in claim 1.

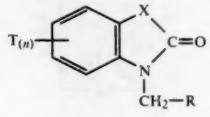
4,282,029

N-(PYRIDYLMETHYL)-2-OXOBENZOTHIAZOLINE DERIVATIVES AND THEIR USE AS PLANT GROWTH REGULANTS

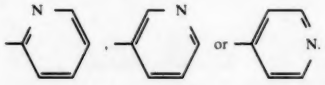
John J. D'Amico, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 31, 1980, Ser. No. 117,403
Int. Cl.³ C07D *513/04*; A01N *43/86*
U.S. Cl. 71—90 **21 Claims**

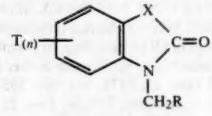
1. A compound of the formula



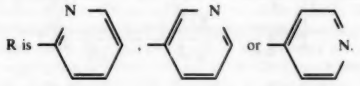
wherein:
T is hydrogen, C_{1-5} alkyl, halo, $—CF_3$, —CN or $—NO_2$;
x is sulfur
n is 1 or 2;
R is



8. A method of regulating the natural growth and development of leguminous plants which method comprises applying to said leguminous plants or their habitat an effective plant growth regulating amount of a compound of the formula



wherein:
T is hydrogen, C_{1-5} alkyl, halo, $—CF_3$, —CN or $—NO_2$;
x is sulfur
n is 1 or 2;
R is



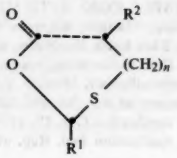
4,282,030

METHOD FOR PLANT GROWTH REGULATION

Eriks V. Krumkalns, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 3, 1980, Ser. No. 193,857
Int. Cl.³ A01N *43/28, 43/32*
U.S. Cl. 71—90 **11 Claims**

1. A method for regulating plant growth comprising applying to a plant an amount effective to provide plant growth regulation of a compound of the formula



wherein:
R^1 is trichloromethyl, or trifluoromethyl;
R^2 is hydrogen or methyl; and n is 0 or 1.

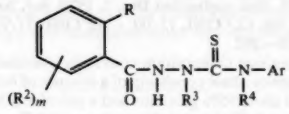
4,282,031

SUBSTITUTED THIOSEMICARBAZIDES, THEIR MANUFACTURE AND USE AS PLANT GROWTH REGULANTS

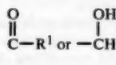
Jerry L. Rutter, Overland Park, and James L. Ahle, Shawnee, both of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 851, Jan. 3, 1979, abandoned, and Ser. No. 942,232, Sep. 14, 1978, abandoned. This application Aug. 2, 1979, Ser. No. 62,258
Int. Cl.³ A01N *33/26*
U.S. Cl. 71—99 **66 Claims**

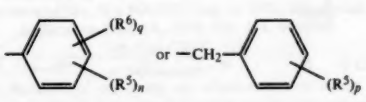
1. A method of regulating the growth of plants comprising applying to the plants a growth-regulating amount of a compound of the formula



wherein
R is



R^1 is —OH, —NR′R″, C_1–C_4 alkyl or hydrogen;
Q is H or C_1–C_4 straight chain alkyl;
each of R′ and R″ independently is hydrogen or C_1–C_{10} alkyl, C_3–C_7 alkoxyalkyl or alkoxyalkoxyalkyl, C_3–C_6 cycloalkyl, phenyl C_1–C_2 alkyl where phenyl group is optionally monosubstituted by fluoro or methoxy, or R′ and R″ taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino or morpholino ring;
each R^2 independently is chloro, fluoro, bromo, methyl, nitro or trifluoromethyl;
m is 0, 1 or 2;
R^3 is hydrogen, C_1–C_4 alkyl, C_3–C_4 alkenyl containing no α,β-unsaturation, 2-hydroxyethyl, phenyl or benzyl;
R^4 is hydrogen or C_1–C_3 alkyl;
Ar is naphthyl, anthranyl, phenanthryl or a group having one of the following formulae:



each R^5 independently is C_1–C_4 alkyl, chloro, bromo, fluoro, nitro, C_1–C_3 alkoxy or C_1–C_3 alkylthio, provided that both ortho positions are not substituted by alkyl;
R^6 is carbethoxy, phenoxy, benzyloxy, phenyl or dimethylamino;
n is 0, 1, 2 or 3;
q is 0 or 1;
the sum of n plus q does not exceed 3; and p is 0 or 1;
or an agriculturally-acceptable salt or ester thereof.

4,282,032

DIRECT METHOD FOR PRODUCTION OF HIGH-GRADE, HIGH-PURITY FERROMANGANESE

Yoshishige Nagoya, Tokyo; Kosuke Murai, Hachinoheshi; Hirota Amano, Hachinoheshi, and Yoshisada Soga, Hachinoheshi, all of Japan, assignors to Pacific Metals Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,749
Int. Cl.³ C22B *47/00*
U.S. Cl. 75—80 **2 Claims**

1. A method for the production of high-grade, high-purity ferromanganese consisting of not less than 90% Mn, not more than 1.5% Si, not more than 0.1% C and not more than 0.05% P comprising the steps of charging a molten Mn-containing material having a Mn content in the range from 10 to 40%, at least one non-carbonaceous reducing agent selected from the group consisting of Si-containing alloys, Al-containing alloys and Ca-containing alloys and a slagging material in a reaction vessel capable of performing horizontal eccentric circular motion and subjecting the reaction vessel to the said horizontal eccentric circular motion at between 35 and 65 cycles per minute to mix and agitate the contents of the vessel, whereby the Mn oxide contained in the molten Mn-containing material is reduced by the non-carbonaceous reducing agent.

4,282,033

MELTING METHOD FOR HIGH-HOMOGENEITY PRECISE-COMPOSITION NICKEL-TITANIUM ALLOYS

David Goldstein, Adelphi, and Scott Hoover, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1980, Ser. No. 160,050
Int. Cl.³ C22C *19/03*
U.S. Cl. 75—170 **7 Claims**

1. A method of preparing a highly homogeneous nickel-titanium base shape change memory alloy comprising the following steps in order:
(1) converting a consumable electrode arc melt prepared nickel-titanium base shape change memory alloy into particles selected from the group consisting of powder, shot, chips, and flakes;
(2) blending the nickel-titanium base alloy particles;
(3) melting the nickel-titanium base particles; and
(4) allowing the molten nickel-titanium base alloy to solidify into a desired shape.

4,282,034

AMORPHOUS METAL STRUCTURES AND METHOD

Jeffery S. Smith, Hamilton; John H. Perepezko, Madison, both of Wis.; Don H. Rasmussen, Canton, N.Y., and Carl R. Loper, Jr., Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

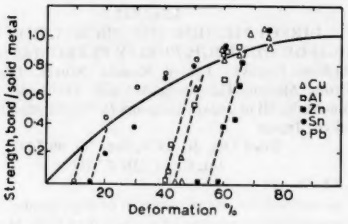
Filed Nov. 13, 1978, Ser. No. 960,100
Int. Cl.³ B01J *2/02*
U.S. Cl. 75—232 **4 Claims**

1. In the method of producing amorphous metal structures from amorphous metal particles produced by
(a) emulsifying the metal as droplets in a molten state in an inert carrier fluid,
(b) reacting the molten metal while in the emulsified state in the fluid to form a reaction product on the surface of the metal droplets which stabilizes the metal droplets in the emulsion,
(c) cooling the emulsion whereby the metal droplets solidify

as particles of undercooled metal in the amorphous state, and

(d) separating the undercooled amorphous metal particles, the improvement comprising:

(1) compressing the particles while deforming the particles to apply shear and compressive forces to said particles to expose the amorphous metal interior of the reaction product on the surface of the particles while at a temperature below recrystallization temperature of the metal to avoid recrystallization, whereby the exposed amorphous metal of the particles interbond with each other to form a solid amorphous metal structure.



4,282,035

LEAD-FREE AND CADMIUM-FREE FRITS

Jaroslava M. Nigrin, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 15, 1980, Ser. No. 121,745

Int. Cl.³ C03C *3/08, 5/00*

U.S. Cl. 106—48 **2 Claims**

1. A frit essentially free from cadmium and lead demonstrating good glass stability, a coefficient of thermal expansion (20°–300° C.) between about 52–65$\times 10^{-7}$/°C., a viscosity suitable for firing at about 850°–1100° C., and excellent resistance to attack by acids and bases as evidenced by no visual change in appearance and a weight loss of no more than about 0.05% after an exposure of 24 hours at 96° C. to a stirred aqueous solution containing 10% by weight citric acid and by no visual change in appearance and a weight loss of no more than 0.02% after an exposure of 24 hours at 96° C. to an aqueous solution containing 0.3% by weight alkaline detergent, said frit consisting essentially, expressed in weight percent on the oxide basis as calculated from the batch, of

SiO_2	51–60
B_2O_3	4.5–8
BaO	0–13
SrO	0–18
BaO + SrO	6–30
ZrO_2	4–8
Al_2O_3	5–8
Li_2O	0–4
Na_2O	0–5
K_2O	0–5
$Li_2O + Na_2O + K_2O$	1–5
MgO	0–6
CaO	0–12
Bi_2O_3	0–10
$MgO + CaO + Bi_2O_3$	0–20

4,282,036

FLOWABLE CONCRETE MIXTURE

Ulrich Finsterwalder, Munich; Klemens Finsterwalder, Berg Starnberger See; Kurt Koch, Puchheim, and Hans Puls, Hamburg, all of Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 863,408, Dec. 22, 1977, abandoned. This application Oct. 19, 1979, Ser. No. 86,521

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658128

Int. Cl.³ C04B *13/02*

U.S. Cl. 106—97 **4 Claims**

1. In a concrete mixture for the production of steel reinforcing concrete or prestressed concrete suitable for use as watertight floating bodies made of steel and concrete wherein cement glue composed of a mixture of cement and water is used to fill the hollow spaces between the pieces of a particulate aggregate and hold said aggregate together, the improvement consisting essentially of the volume of cement glue being larger than the volume required to fill the hollow spaces between the particulate aggregate alone and the viscosity of the cement glue, the particle size and the volume/weight ratio of the aggregate being adjusted so that the aggregate particles are suspended in the cement glue and remain suspended until the cement glue hardens and wherein the cement glue contains pozzolana as a filler for the formation of a matrix.

4,282,037

GILSONITE EMULSION COMPOSITIONS

Michael V. Burris, 1760 Industrial Rd., Las Vegas, Nev. 89102

Continuation-in-part of Ser. No. 912,357, Jun. 5, 1978, Pat. No. 4,193,815. This application Dec. 7, 1979, Ser. No. 101,148

Int. Cl.³ C08L *95/00, 1/00;* **C09D** *11/13*

U.S. Cl. 106—202 **11 Claims**

1. An emulsion composition consisting essentially of

(a) a gilsonite phase consisting of a mixture of between about 33 and about 95% gilsonite, and a petroleum hydrocarbon having a boiling point above about 200° F., and

(b) a water phase consisting essentially of water and between about 0.05 and about 10% of an emulsifying agent, and wherein the gilsonite:water phase ratio is between about 1:2 and 3:1, respectively.

7. A composition for producing an insulation board comprising cellulosic particles and an emulsion composition of claim **1** or **5**.

4,282,038

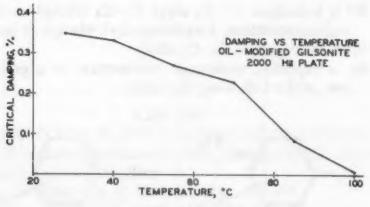
COIL IMPREGNANT WITH MODIFIED ASPHALTITE BASE

Mason H. Earing, Danville, Ill., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 614,320, Sep. 17, 1975, Pat. No. 4,022,635. This application Oct. 18, 1976, Ser. No. 733,432

Int. Cl.³ C08L *95/00*

U.S. Cl. 106—273N **2 Claims**



1. An impregnating compound for electrical coils comprising: 75–85% by weight of a modified asphaltite composition having a softening point of from 90–105° C.; 15–25% by

weight of a wax: the mixture having a softening point of from 125°–135° C., a penetration at 25° C. with a 100 gram mass after 5 seconds of from 5 –20 mm, and a viscosity at 170° C. of from 70–125 centipoise, the asphaltite composition being gilsonite which is modified by the addition of an oil having a viscosity gravity constant greater than 0.90 and a viscosity in SSU at 100° C. of from 40 to 55 and added to the extent of from 29 to 36% by weight of the oil-gilsonite mixture.

4,282,039

CARBON RAMMING MIX

Vaughn L. Bullough, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jun. 30, 1980, Ser. No. 164,222
Int. Cl.³ C08L *95/00*
U.S. Cl. 106—278 **11 Claims**

1. A cold ramming mix suitable for ramming of alumina reduction cell cathode seams at ambient temperature comprising:

(A) a solid portion comprising

(I) from about 30 to about 60 weight percent of coarse calcined anthracite;

(II) from about 50 to about 30 weight percent of anthracite dust; and

(III) from about 1 to about 10 weight percent graphite dust;

(B) from about 5 and about 15 weight percent based on the weight of the solid portion of a binder pitch; and

(C) from about 5 to about 10 weight percent based on the weight of the solid portion of a heavy petroleum distillate oil having a 95% distillation range between about 370° and 540° C.

4,282,040

MONOOLEFINIC PLASTICIZED SULFUR

Ronald A. Schneider, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 952,526, Oct. 18, 1978, abandoned, which is a continuation of Ser. No. 718,236, Aug. 27, 1976, abandoned. This application Mar. 17, 1980, Ser. No. 130,779
Int. Cl.³ C01B *17/00*; C09K *3/00*
U.S. Cl. 106—287.32 **10 Claims**

1. A plasticized sulfur composition, having superior resistance to crazing and cracking when coated on a surface, consisting essentially of at least 75 weight percent sulfur, 5 to 20 weight percent of a solid filler; and from 0.2 to 5 weight percent of a sulfur plasticizing compound selected from group consisting of esentially linear alpha-monoolefin having 6 to 14 carbon atoms and mixtures thereof.

4,282,041

METHOD FOR REMOVING ALUMINIDE COATINGS FROM NICKEL OR COBALT BASE ALLOYS

Frank Cork, Alvaston, England, assignor to Rolls-Royce Limited, London, England

Continuation of Ser. No. 966,757, Dec. 5, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,557
Int. Cl.³ C23G *1/04*
U.S. Cl. 134—3 **5 Claims**

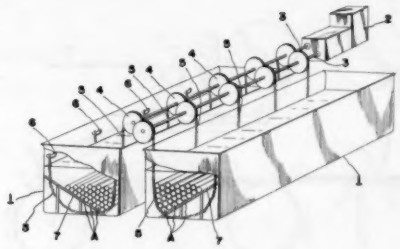
1. A method of removing an aluminum containing alloy coating from a nickel or cobalt base alloy substrate comprising immersing the coated substrate in an aqueous mixture containing from about 5 to about 30% vol./vol. nitric acid and from about 5 to about 30% wt./vol. sulphamic acid.

4,282,042

WIRE ROD STEEPING EQUIPMENT

Kotoro Tsukamoto, 7-8, Kashima 4-chome, Yodogawa-ku, Osaka, Japan

Filed Sep. 1, 1977, Ser. No. 829,863
Int. Cl.³ B08B *3/04, 9/02*
U.S. Cl. 134—140 **2 Claims**



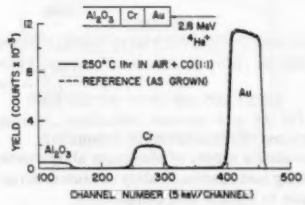
1. A wire rod steeping apparatus comprising an elongated tank, a rotary shaft extending along one side of the tank, a drive means connected to said shaft for driving said rotary shaft in opposite rotational directions, a plurality of chain wheels spaced along the length of said shaft, chains having their one ends connected to and extending from said wheels and drooping into said tank and having the other ends connected to the opposite side of the tank from the side of the tank along which said shaft extends, and a plurality of slanting frames fixed in said tank spaced at intervals therealong and having slanting members slanting upwardly from the side of the tank along which said shaft extends to the opposite side of the tank, said chains drooping below said slanting members when the chains are fully extended.

4,282,043

PROCESS FOR REDUCING THE INTERDIFFUSION OF CONDUCTORS AND/OR SEMICONDUCTORS IN CONTACT WITH EACH OTHER

Chin-An Chang, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 25, 1980, Ser. No. 124,187
Int. Cl.³ H01L *29/46*; B32B *15/04*; H01L *21/283*
U.S. Cl. 148—1.5 **20 Claims**



1. A method for reducing the interdiffusion when at elevated temperature of a first material and a second material which is adjacent to and in intimate contact with the first material, wherein the electronegativity of the first material is different from the electronegativity of the second material, and wherein each of the first material and the second material is a metallic-type electrical conductive material or a semiconductive material or a mixture thereof which method comprises when at elevated temperature of at least about 100° C. exposing at least one surface of said first material containing CO or O_2 or both, provided that the gas increases the work function of the first

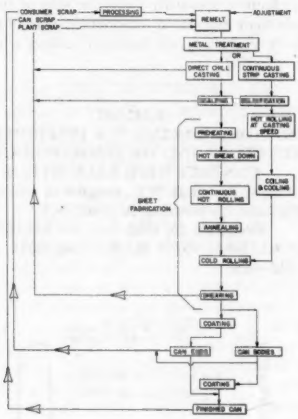
material when it is more electronegative than the second material or decreases the work function of the first material when it is less electronegative than the second material, and thereby reducing the interdiffusion of the first and second materials at their interface and at elevated temperature.

4,282,044

METHOD OF RECYCLING ALUMINUM SCRAP INTO SHEET MATERIAL FOR ALUMINUM CONTAINERS

King G. Robertson, and Donald C. McAuliffe, both of Golden, Colo., assignors to Coors Container Company, Golden, Colo.

Filed Aug. 4, 1978, Ser. No. 931,041
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—2 **17 Claims**



1. A process of manufacturing comprising:

(a) providing a supply of aluminum alloy consumer scrap;

(b) melting said aluminum alloy consumer scrap in a heated furnace to form a melt composition;

(c) adjusting the melt composition to a composition within a range of 1.3–2.5% magnesium and 0.4–1.0% maganese, with between 0.15–1.0% silicon, wherein said manganese and magnesium are present in a total concentration of 2.0–3.3% and a ratio of magnesium to manganese of between 1.4:1 and 4.4:1 from about 0.1% to 0.9% iron and from about 0.05% to 0.4% copper;

(d) treating the composition to remove materials which would impair casting and quality of finished sheet;

(e) casting the composition; and

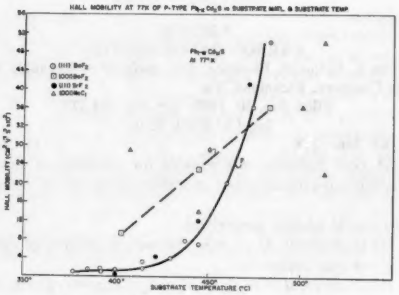
(f) fabricating the composition into aluminum alloy sheet suitable for manufacturing aluminum containers.

4,282,045

$PB_{1-w}CD_wS$ EPITAXIAL THIN FILM

James D. Jensen, Highland, and Richard B. Schoolar, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 864,417, Dec. 27, 1977, Pat. No. 4,227,948.
This application Apr. 25, 1980, Ser. No. 143,562
Int. Cl.³ H01L *29/26, 27/12*
U.S. Cl. 148—33.3 **6 Claims**



1. An epitaxial thin-film of an alloy of:

$$Pb_{1-w}Cd_wS;$$

where $0<w\leqq 0.15$.

4,282,046

METHOD OF MAKING PERMANENT MAGNETS AND PRODUCT

Peter G. Frischmann, Scotia; Fred E. Luborsky, Schenectady, and Russell E. Tompkins, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 898,820, Apr. 21, 1978, abandoned.
This application Jul. 16, 1979, Ser. No. 58,062
The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.
Int. Cl.³ H01F *1/00*
U.S. Cl. 148—121 **9 Claims**

1. The method of making a magnetically hard article having a desired shape, volume and coercive force, which comprises the steps of

casting a magnetic alloy composition in the form of a ductile, magnetically-soft amorphous metal ribbon,

tightly winding the ductile ribbon to build up substantially the desired article shape and volume,

preselecting a value of coercive force to be provided to said article,

heating said wound ribbon to a preselected temperature above the crystallizatiion temperature for said magnetic alloy, and

maintaining said wound ribbon at said preselected temperature for a period of time at least sufficient to develop said preselected coercive force, whereby the desired magnetically hard article results.

4,282,047

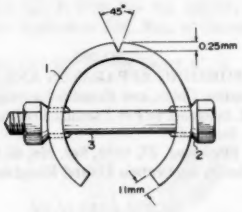
METHOD OF PRODUCING STEEL PIPE MATERIAL FOR OIL WELL

Mitsukuni Yamagata, Chiba; Keiichiro Takitani, Nagoya; Sadao Hasuno, Chita, and Kuniaki Motoda, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 29, 1979, Ser. No. 70,905
Int. Cl.³ C21D *1/18*
U.S. Cl. 148—143 **2 Claims**

1. A method of producing steel pipe material for an oil well,

wherein a steel consisting essentially of in weight ratio from 0.15 to 0.50% C, from 0.1 to 1.0% Si, from 0.3 to 1.5% Mn, from 0.003 to 0.10% Al, from 0.0005 to 0.005% B, not more than 0.003% N, the balance being essentially Fe and inevitable impurities is heated at a temperature ranging from the transformation point Ac_1 to the transformation point Ac_3 plus 50° C. at an average heating rate of 1°–30° C./sec, quenched at the heating temperature ranging from the transformation point Ac_3 plus 50° C. to the crystal grain coarsening initiating temperature, and thereafter, tempered at a temperature not higher than the transformation point Ac_1.

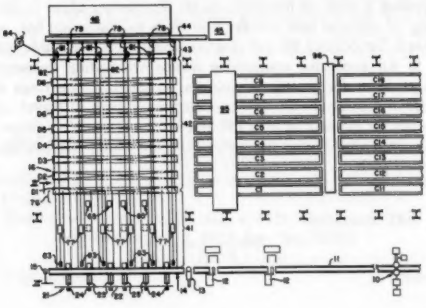


4,282,048

METHOD FOR COOLING HOT-ROLLED SHAPES

John W. Zentner, 42238 Edwards Cir., Columbiana, Ohio 44408

Filed Nov. 6, 1979, Ser. No. 91,869
Int. Cl.³ C21D *9/00*
U.S. Cl. 148—155 **6 Claims**



1. A method for cooling hot-rolled shapes, said method including the steps of:

cooling hot lengths of rolled shapes, at a first cooling rate on a first bed section of a cooling bed by laterally advancing the shapes therealong at a first selected spacing,

thereafter forming a layered collection of hot-rolled shapes having a second selectable spacing on said cooling bed to reduce the cooling-rate thereof as compared with the first cooling rate in said first bed section,

moving the layered collection of hot-rolled shapes along the cooling bed to at least one predetermined discharged station on said cooling bed,

loading the layered collection of hot-rolled shapes into a container,

cooling the hot-rolled shapes in said container, and

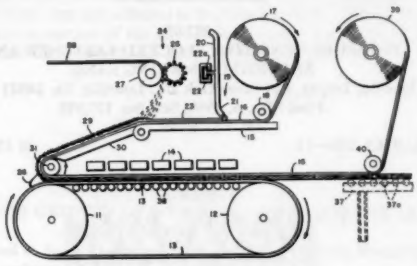
unloading the hot-rolled shapes from said container after cooling.

4,282,049

METHOD FOR MAKING RESIN PANELS

Donald B. Morse, Joliet, Ill., assignor to Kemlite Corporation, Joliet, Ill.

Continuation of Ser. No. 474,372, May 30, 1974, abandoned.
This application Apr. 5, 1976, Ser. No. 673,869
Int. Cl.³ B32B *31/12*
U.S. Cl. 156—62.2 **4 Claims**



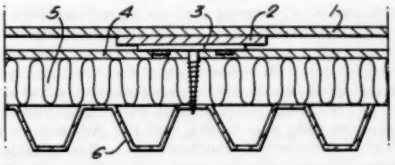
1. In a method for preparing a resin impregnated glass fiber sheet in which a layer of liquid thermosetting resin is deposited on a carrier film and a layer of reinforcing glass fibers is deposited in random arrangement on top of said resin layer to form a laminate structure in which a layer of resin is over said film and a layer of glass fibers is over said resin layer, the improvement comprising passing said structure to an upper portion of the upper roll of a pair of vertically spaced rotating rolls, passing said structure downwardly on the descending side of said upper roll, passing about the lower roll of said pair of rolls and endless belt which is impervious to said resin, turning said structure downwardly and then rearwardly about said upper roll to thereby bring said glass fiber layer into contact with said belt, passing said structure rearwardly through the nip of said pair of rolls while said film is in contact with said upper roll and while said glass fiber layer is in contact with said belt and while said pair of rolls is set at a predetermined spacing, to thereby squeeze such structure as it passes through said nip and to press resin from said resin layer through said glass fiber layer and into contact with said belt, while supporting said structure on said belt passing said structure through a heating zone to cure the resin contained therein, and controlling the rate at which said resin is deposited on said film with respect to the rate at which said resin is passed through said nip to provide and to maintain a pool of liquid on the surface of said belt in advance of said nip.

4,282,050

PROCEDURE FOR COVERING ROOFS

Harald Thiis-Evensen, Porsgrunn, Norway, assignor to Isola Fabrikker A/S, Eidanger, Norway

Filed Jul. 31, 1979, Ser. No. 62,288
Claims priority, application Norway, Aug. 11, 1978, 782746
Int. Cl.³ B32B *7/08, 7/04*
U.S. Cl. 156—71 **1 Claim**



1. A process for the cladding of a roof on to a support structure, comprising the steps of applying, without securing, a layer of insulation over said structure, applying, without securing, webs of impervious cladding material over said layer of

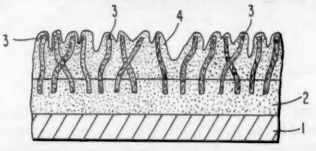
insulation, said webs being applied with adjacent edges thereof in abutting relationship, simultaneously anchoring said insulation layer and said cladding mechanically to said structure, said anchoring step including the application of fastening devices which span said edges of said webs for simultaneously holding them in place, and sealing over said edges of said webs as well as over said fastening devices by welding on welding strips for covering said edges and said devices.

4,282,051

PRESSURE-SENSITIVE FLOCKED FASTENER AND METHOD OF MAKING SAME

John M. Terpay, 528 River Oak Dr., Danville, Va. 24541

Filed Mar. 6, 1980, Ser. No. 127,858
Int. Cl.³ E04B *2/00*
U.S. Cl. 156—71 **20 Claims**



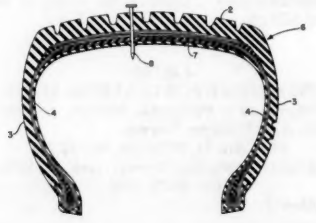
1. A pressure-sensitive fastener having a discontinuous surface comprising a flocked pile surface adhered to a base material by a permanent adhesive, and a reservoir of aqueous pressure-sensitive adhesive adhering to and between the fibers forming said flocked pile surface.

4,282,052

METHOD OF PREPARING A SELF-SEALING PNEUMATIC TIRE

Robert L. Dobson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 21,656, Mar. 19, 1979, abandoned, which is a division of Ser. No. 368,145, Jun. 8, 1973, Pat. No. 4,163,467. This application Jan. 14, 1980, Ser. No. 112,027
The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.
Int. Cl.³ B60C *19/12*
U.S. Cl. 156—79 **11 Claims**



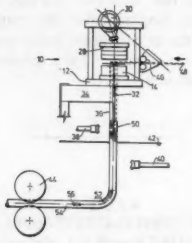
1. A method of preparing a self-sealing pneumatic tire which comprises (A) building a green, unvulcanized rubber tire construction; said construction comprised of tread, spaced beads, connecting sidewalls and supporting structure and having an adherent unvulcanized rubber layer containing a heat activatable, gas liberating blowing agent on its inner surface, (B) shaping, molding and heating said tire construction under pressure to substantially simultaneously both covulcanize said construction and adherent layer and activate said blowing agent to cause its decomposition to form a gaseous product and (C) releasing said pressure to allow expansion of said gaseous product and provide a pneumatic tire having an integral, thin gauge, covulcanized, resilient rubber closed cell structure on its inner surface with said closed cells containing a gas under a greater than atmospheric pressure.

4,282,053

TUBE FORMING APPARATUS AND METHOD

Donald B. Lupton, Colne, and Kenneth Lawrence, Baildon, both of England, assignors to PH Thermal Products Limited, West Yorkshire, England

Filed Aug. 27, 1979, Ser. No. 69,913
Claims priority, application United Kingdom, Sep. 13, 1978, 36729/78
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—264 **37 Claims**



1. An apparatus which comprises a pair of concentric cutting edges mounted above and aligned with a guide bar along which a ring of material is adapted to be guided, means for pressing a sheet of material against the cutting edges to cut a ring of material and transfer said rings to said guide bar, and means for coating the cut rings of material on the guide bar.

9. An apparatus comprising means for cutting successive rings from sheet material, means for guiding the rings for coaxial movement along a predetermined path of travel, and means for coating at least exterior circumferential surfaces of the rings during the movement thereof along the predetermined path.

4,282,054

COATING COMPOSITION FOR RELEASE SHEETS

John A. Mattor, Bar Mills, and Lawrence Price, Old Orchard Beach, both of Me., assignors to Scott Paper Company, Philadelphia, Pa.

Division of Ser. No. 863,804, Dec. 23, 1977, Pat. No. 4,166,150. This application Apr. 20, 1979, Ser. No. 31,767
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—289 **12 Claims**

5. In a method of consolidating a plurality of laminae impregnated with thermosetting resin by simultaneously heating and pressing the laminae, the improvement wherein at least one of the outer laminae is pressed against a release surface of a dried and cured coating composition comprising, in effective amounts for release, a release agent, a crosslinkable thermosetting resin, and a water dispersible organic compound containing polyoxyethylene, polyoxypropylene, or a block copolymer of polyoxyethylene and polyoxypropylene.

4,282,055

APPARATUS FOR APPLYING ADHESIVE RIDER STRIPS TO THE FLATTENED END EDGES OF TUBE SECTIONS OR SACKS

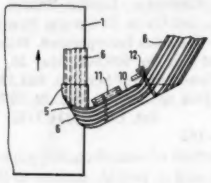
Frank Bosse, Tecklenburg, and Horst Zemella, Leeden, both of Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 9, 1980, Ser. No. 138,754

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914696

Int. Cl.[3] B32B *3/04*; B65B *61/18*

U.S. Cl. 156—464 4 Claims



1. An apparatus for applying adhesive rider strips to the flattened end edges of tube sections or sacks, comprising a curved forming plate over the convex outer side of which the rider strip-forming web is guided and which, starting from its rectilinear run-up edge up to the transverse apex line of the curvature, is increasingly curved about its axis lying in the direction of web travel and, behind the apex line up to its run-off edge, is increasingly oppositely curved into the shape of the rider strip framing the edge, characterised in that the groove of the forming plate (5) that embraces the end edges and deforms the web to U shape is disposed in a substantially horizontal plane and the run-up edge is so inclined to the groove that it includes an acute angle with the upper side from its medial plane, and that the hot melt-applying adhesive nozzle (8) is formed by a plate (8.1) which is provided with a slot or bores, is disposed closely above and parallel to the web (6) running up the oblique run-up edge, and is displaceable between its front operative position and a retracted inoperative position.

4,282,056

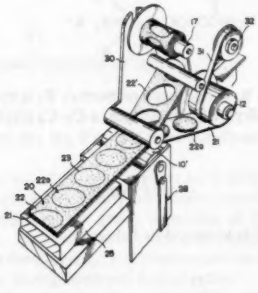
BOTH-SURFACE ADHESIVE TAPE PRODUCING APPARATUS

Tokujiro Okui, 3, C10-204, 3-chrome, Shinsenri Minamimachi, Toyonaka City, Japan

Division of Ser. No. 1,032, Jan. 4, 1979, abandoned. This application Jul. 2, 1979, Ser. No. 53,931

Int. Cl.[3] B32B *31/00*

U.S. Cl. 156—519 15 Claims



1. A both-surface adhesive tape producing apparatus comprising a means for unwinding a both-surface adhesive tape consisting of a bandshaped film and a band-shaped adhesive adhered on one side of said film, a means for supporting and guiding said both-surface adhesive tape pulled out of said unwinding means, a means for cutting a part of said adhesive to be of a fixed shape and size without cutting the still adhered film, feeding means for moving said both-surface tape to said cutting means, a peeling means for peeling the excess portion of said adhesive from the film while leaving the adhesive of fixed shape and size adhered to the film, means for winding up the excess portion of the adhesive and means for winding up said film with the adhered adhesive shape.

4,282,057

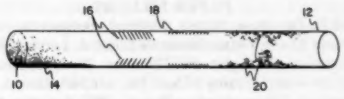
VAPOR GROWTH OF MERCURY IODIDE FOR USE AS HIGH ENERGY DETECTORS

Samuel P. Faile, Cincinnati, Ohio, assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Feb. 27, 1980, Ser. No. 125,157

Int. Cl.[3] C30B *29/12*

U.S. Cl. 156—614 14 Claims



1. A method for vapor phase growth of mercuric iodide crystals, said method comprising the steps of:

providing an envelope;

introducing into said envelope a mercuric iodide source material along with an organic transport material that is, at least in part, an organic polymer when subjected to heat sufficient to cause crystal growth in said envelope; and

providing heat to said envelope to cause crystal growth to occur in said envelope in the presence of said organic polymer therein.

4,282,058

APPARATUS FOR THERMAL TREATMENT OF FLOWABLE MATERIALS

Johann Grüter, and Heinz Märki, both of Zürich, Switzerland, assignors to Luwa AG, Zürich, Switzerland

Filed Apr. 24, 1980, Ser. No. 143,279

Claims priority, application Switzerland, May 3, 1979, 137/79; May 3, 1979, 138/79

Int. Cl.[3] B01D *1/24*

U.S. Cl. 159—13 R 16 Claims

1. An apparatus for the thermal treatment of flowable materials comprising:

means defining a treatment compartment;

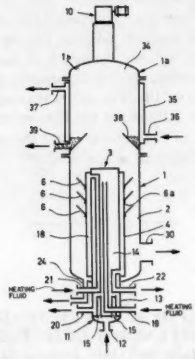
an essentially vertically dispositioned insert member arranged in said treatment compartment;

said insert member having an outer surface constituting a treatment wall;

a translatorily up-and-down movable treatment element cooperating with said treatment wall;

said treatment element comprising at least one spreader element which coacts with the treatment wall for forming a thin film;

pre-evaporator means for a starting product to be treated and arranged internally of said insert member; and



said pre-evaporator means opening into said treatment compartment.

4,282,059

PAPER FILLERS

Richard R. Davidson, Barton, England, assignor to Associated Portland Cement Manufacturers Limited, London, England

Continuation of Ser. No. 852,705, Nov. 18, 1977, abandoned, which is a continuation of Ser. No. 636,566, Dec. 1, 1975, abandoned. This application Dec. 4, 1979, Ser. No. 100,117

Claims priority, application United Kingdom, Dec. 10, 1974, 53309/74

Int. Cl.³ D21D *3/00*

U.S. Cl. 162—158 **5 Claims**

1. A method of manufacturing paper having increased dry strength and increased wet strength to give improved machine runnability at a given content of mineral filler, which method comprises the steps of:

(a) preparing a concentrated but pourable aqueous suspension of mineral particles which contains, in solution, (i) an anionic polymeric material which normally acts as an anionic flocculating agent for said mineral particles in aqueous suspension in an amount sufficient to flocculate said mineral particles and (ii) an anionic deflocculant in an amount just sufficient to inhibit the flocculating action of said polymeric material, said anionic polymeric material does not thicken said suspension and said suspension being prepared in the substantial absence of papermaking fibres;

(b) contacting the suspension of step (a) with an aqueous solution containing a sufficient amount of metallic cations of a valency greater than 1 as to counteract the operation of said anionic deflocculant and thereby permit flocculation of said mineral particles by said polymeric material to form agglomerates,

the polymeric material being such that it is not of itself insolubilized or precipitated from an aqueous dispersion thereof by the addition of the aqueous solution of step (b);

(c) forming a papermaking stock containing said agglomerated mineral particles and papermaking fibres in the substantial absence of co-flocs of mineral particles and papermaking fibres; and

(d) forming a paper web from the papermaking stock of step (c).

5. The method as defined in claim 1, wherein the mineral particles are formed of a material selected from calcium carbonate, clay, titanium dioxide and mixtures thereof; the flocculant is a polyacrylamide and is present in an amount of from 4×10^{-5} to 0.1% based upon the weight of the filler; the deflocculant is selected from polyacrylates, polyphosphates, carboxylated polyphosphates, silicates and alkali solubilized lactic casein, the amount of said deflocculant being from 0.01 to 0.5% based upon the weight of filler, and the suspension of step (a) has a solids content of from 20 to 70% by weight.

4,282,060

ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

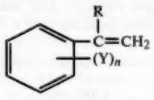
Division of Ser. No. 909,606, May 25, 1978, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Aug. 29, 1979, Ser. No. 70,937

Int. Cl.³ D21H *3/82*

U.S. Cl. 162—162 **22 Claims**

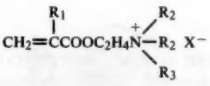
1. In the method of manufacturing paper wherein an opacifying agent is used to provide opacity in the final paper product, either by means of a coating or by means of internal addition to the paper pulp, the improvement wherein there is employed as at least a portion of the opacifying agent water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer and 82) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alphachloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



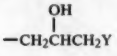
wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole percent to 100 mole percent of at least one cationic monomer selected from the group consisting of

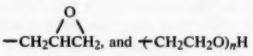


(I)

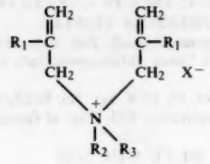
wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a C_1–C_4 alkyl, R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,

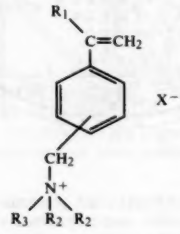


where n is an integer 1 or more and X^- is an anion,



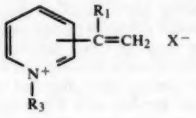
(II)

wherein R_1 is hydrogen or a C_1–C_4 alkyl, R_2 is hydrogen, alkyl or substituted alkyl, and R_3 and X^- are as defined in formula (I),



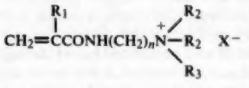
(III)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I),



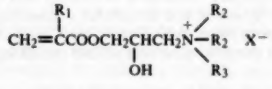
(IV)

wherein R_1, R_3 and X^- are as defined in formula (I),



(V)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and n is an integer 1, 2 or 3 and



(VI)

wherein R_1, R_2, R_3 and X^- are as defined in formula (I), and

(ii) from about 95 mole percent to 0 mole percent of at least one ethylenically unsaturated nonionic monomer selected from the group consisting of N-vinyl pyrrolidone, ethylenically unsaturated monomers having amide functionality, and ethylenically unsaturated monomers having hydroxyl functionality,

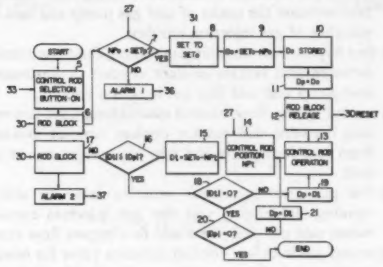
the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed.

4,282,061

SYSTEM FOR PREVENTING ERRONEOUS OPERATION OF CONTROL RODS

Mikio Sakurai, Mito; Yuichiro Yoshimoto, and Shiro Nakamura, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 22, 1979, Ser. No. 13,833
Int. Cl.³ G21C 7/06
U.S. Cl. 176—20 R **14 Claims**



1. A system for preventing erroneous operation of control rods to be inserted in a nuclear reactor comprising:

a control rod objective position setting means for producing an objective position setting signal indicating an objective position of a control rod selected to be driven;

a control rod drive means for moving the selected control rod in the axial direction thereof in said nuclear reactor on the basis of said objective position setting signal;

a control rod position detecting means for detecting a position of the selected control rod to produce a position signal;

an operation means for obtaining a first absolute value representing a difference between said objective position setting signal and the position signal before movement of the selected control rod, and a second absolute value representing a differencce between said objective position setting signal and the position signal during movement of the selected control rod, for comparing said first absolute value with said second absolute value thereby to produce a movement blocking signal when said second absolute value exceeds said first absolute value, and for discriminating, after occurrence of said movement blocking signal, the direction of movement of the selected control rod necessary for approaching said second absolute value to said first absolute value to produce a rod block release signal and a return movement command signal;

a control rod blocking means for stopping operation of said control rod drive means in response to said movement blocking signal and for establishing again an operative condition of said control rod drive means in response to said rod block release signal; and

a return operation commanding means for causing said control rod drive means to operate whereby the selected control rod is accurately moved to said objective position thereof.

4,282,062

PROCEDURE AND EQUIPMENT FOR INJECTING GAS INTO LIQUIDS

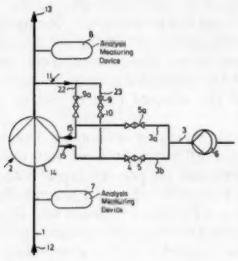
Max Stiefel, Mannheim, and Erich Wolfbeiss, Ettlingen, both of Fed. Rep. of Germany, assignors to Babcock-Brown Boveri Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 2, 1978, Ser. No. 948,120
Int. Cl.³ G21D 1/02
U.S. Cl. 176—37 **6 Claims**

1. A device for injecting gas into the reactor coolant for pressurized water nuclear power plants comprising:

a gas pump;

a reactor coolant conduit;
a feed pump having a housing;
a first plurality of gas injection nozzles positioned within said housing;
a second plurality of gas injection nozzles positioned within said housing;
a first gas injection conduit establishing fluid communication between the outlet of said gas pump and said first plurality of gas injection nozzles;
a second gas injection conduit establishing fluid communication between the outlet of said gas pump and said second plurality of gas injection nozzles;
a first bypass flow conduit establishing fluid communication between said reactor coolant conduit downstream from said pump and said first gas injection conduit;
a second bypass flow conduit establishing fluid communication between said reactor coolant conduit downstream from said feed pump and said second gas injection conduit;
a first gas injection conduit isolation valve for selectively opening and closing said first gas injection conduit between said gas pump and said first bypass flow conduit;
a second gas injection conduit isolation valve for selectively opening and closing said second gas injection conduit between said gas pump and said second bypass flow conduit;
a first gas injection conduit check valve positioned between



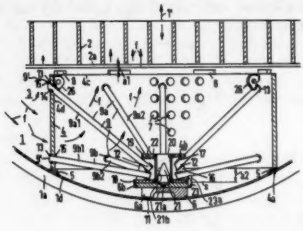
said gas pump and said first bypass flow conduit for precluding fluid flow in the direction of said gas pump within said first gas injection conduit;
a second gas injection conduit check valve positioned between said gas pump and said second bypass flow conduit for precluding fluid flow in the direction of said gas pump within said second gas injection conduit;
a first bypass flow conduit isolation valve for selectively opening and closing said first bypass flow conduit between said reactor coolant conduit and said first gas injection conduit;
a second bypass flow conduit isolation valve for selectively opening and closing said second bypass flow conduit between said reactor coolant conduit and said second gas injection conduit;
a first bypass flow conduit check valve positioned between said reactor coolant conduit and said first gas injection conduit for precluding fluid flow in the direction of said reactor coolant conduit within said first bypass flow conduit;
a second bypass flow conduit check valve positioned between said reactor coolant conduit and said second gas injection conduit for precluding fluid flow in the direction of said reactor coolant conduit within said second bypass flow conduit;
and, analysing means for determining the gas content of the reactor coolant at both the inlet and outlet of said feed pump.

4,282,063

DEVICE FOR CORE CONTAINER-CRASH PROTECTION AND COOLANT GUIDANCE IN A NUCLEAR REACTOR PRESSURE VESSEL

Lothar Werres, Langensendelbach, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,921
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748483
Int. Cl.³ G21C *5/10*
U.S. Cl. 176—38 **9 Claims**



1. Apparatus for core-barrel crash protection and conduction of coolant in a nuclear reactor pressure vessel having a spherical bottom, including a core support structure having a core barrel and being disposed within the pressure vessel, the apparatus comprisng coolant collecting means disposed below the core support structure and supported on the spherical bottom for uniformly distributing coolant flow, said collecting means being in the form of a substantially hollow cylindrically walled perforated barrel having coolant passage openings formed therein, the spherical bottom having an annular bracket and a central bracket rigid with said spherical bottom, said perforated barrel having a lower rim disposed on said annular bracket and a central support piece disposed on said central bracket, and means for pressing said lower rim against said annular bracket, said pressing means including a strut system connecting said central support piece to said cylindrical wall of said perforated barrel and detachable connecting means for clamping said central support piece to said central bracket, said central bracket and said central support piece defining a small gap therebetween closed under elastic tensional deformation of said strut system by said detachable connecting means so as to press the lower rim of said perforated barrel through said strut system against said annular bracket, a first set of anchor points distributed about the periphery of said central support piece and a second set of anchor points distributed about said cylindrical wall of said perforated barrel, said strut system being in the form of a multiplicity of rods disposed in star-like manner, each of said rods extending from a first to a second anchor point, and, for elastically tensionally deforming said strut system by clamping action of said detachable connecting means, said central support piece extending at least partially above said lower rim in the axial direction of said cylindrical perforated barrel.

4,282,064

NUCLEAR FUEL ELEMENT

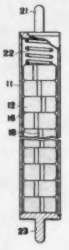
Kiyozumi Hayashi, Toride, and Kazushige Domoto, Yokohama, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed May 25, 1979, Ser. No. 42,512
Claims priority, application Japan, May 24, 1978, 53-62003
Int. Cl.³ G21C *3/30*
U.S. Cl. 176—73 **5 Claims**

1. A nuclear fuel element comprising:
a cladding tube having end plugs for sealing the ends of said tube; and

a multiplicity of fuel pellets stacked within the cladding tube;

each of said fuel pellets having a substantially cylindrical external lateral surface and a plurality of longitudinal recesses having rounded root portions on the external



lateral surface, a height of each pellet ranging from $\frac{1}{4}$ to $\frac{1}{3}$ of the outer diameter thereof,

the fuel pellets being stacked in such a manner that the recesses of one pellet are not aligned with the recesses of adjacent upper and/or lower pellets.

4,282,065

FUEL ASSEMBLY FOR GAS-COOLED NUCLEAR REACTORS

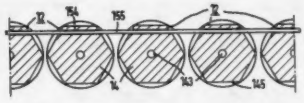
Theodor Hensolt, Nuremberg, and Peter Rau, Mittelehrenbach, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,454

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756667

Int. Cl.³ G21C *3/02*

U.S. Cl. 176—78 **3 Claims**



1. A fuel assembly for gas-cooled nuclear reactors, having a plurality of fuel rods fastened to a mounting plate formed with throughbores serving as passageways for a coolant, the fuel rods having respective perforated end caps by which the fuel rods are connected to a fission-gas exhaust system, the end caps being formed with a respective external thread and being threadedly secured thereby in the mounting plate and simultaneously connected to the fission-gas exhaust system through channels formed in the mounting plate, the mounting plate and the end caps having surfaces formed thereon having a residual roughness of from 4 to 16 microns and being sealingly pressable against one another by the threaded connection between the end caps and the mounting plate, comprising a threaded sleeve serving as means for threadedly securing the respective end caps to the mounting plate, said threaded sleeve being provided with means for gripping the sleeve by a tool and being formed with an internal thread in threaded engagement with the external thread of the respective end caps and an external thread in threaded engagement with a corresponding internal thread formed in the mounting plate, said external thread of said threaded sleeve having a greater pitch than said internal thread thereof.

4,282,066

PROCESS AND APPARATUS FOR COKING COAL USING MICROWAVE RADIATION

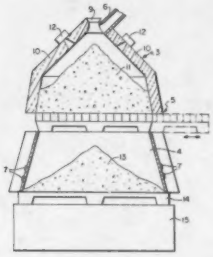
Dietrich Wagener; Horst Fach, and Hayri Ergun, all of Essen, Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 23,092

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1978, 2812520

Int. Cl.³ C10B *19/00, 23/00*

U.S. Cl. 201—6 **22 Claims**



1. A process for coking coal, said process comprising:

introducing coal to be coked into a coking chamber;

exposing said coal within said coking chamber to microwave radiation only, and thereby forming said coal into hot coke; and

withdrawing said hot coke from said coking chamber, introducting said hot coke into a cooling zone, and at least partially cooling said hot coke within said cooling zone to form cooled coke, said cooling comprising exposing photocells to said hot coke, whereby said photocells absorb radiant energy from said coke and transform the thus absorbed radiant energy into electricity.

4,282,067

APPARATUS FOR HIGH VOLUME DISTILLATION OF LIQUIDS

Jerome Katz, and Sidney J. Fogel, both of Rochester, N.Y.

Division of Ser. No. 787,832, Apr. 18, 1977, Pat. No. 4,186,058, and Ser. No. 769,291, Feb. 22, 1977, Pat. No. 4,186,060, which is a continuation-in-part of Ser. No. 681,290, Apr. 28, 1976, Pat. No. 4,035,243. This application Aug. 10, 1979, Ser. No. 65,466

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.³ C02F *1/04*

U.S. Cl. 202—180 **47 Claims**

1. A closed system for high volume distillation of impure liquids comprising:

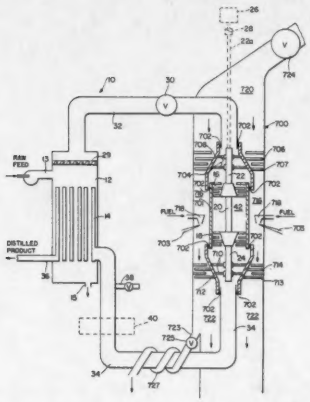
(a) evaporator means, including means for supplying impure liquid feed thereto, for evaporating said impure liquid at a temperature above the freezing point of said liquid at ambient pressure and at a pressure not exceeding a pressure corresponding to said evaporation temperature under saturated conditions;

(b) first compressor means receiving said vapor from said evaporator means for increasing said vapor pressure and temperature;

(c) condenser means in heat transfer relationship with said impure liquid feed for receiving said vapor and for at least partially condensing said vapor whereby the heat released by said vapor is transferred to said feed liquid to supply at least a part of the heat energy necessary for evaporating said feed liquid;

(d) duct means communicating with said condenser means for carrying said vapor from said first compressor means to said condenser means;

(e) means for recovering condensate from said condenser means;
(f) means for removing unevaporated liquid feed from said evaporator means; and
(g) auxiliary turbine means drivingly connected to said first compressor means, said auxiliary turbine means including an auxiliary flow conduit for hot gas flow therethrough,



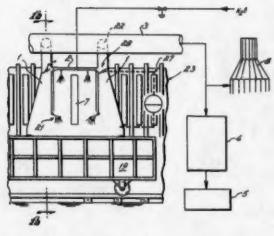
said auxiliary flow conduit annularly disposed with respect to and separated from the space in which said vapor flows, and turbine blading in said conduit, said turbine blading drivingly linked to said first compressor means whereby hot gas flow through said conduit does work on said turbine blading which work is transmitted to said first compressor means.

4,282,068

APPARATUS FOR THE TRANSFER AND QUENCHING OF COKE

Claus Flockenhaus; Manfred Galow, both of Essen; Joachim F. Meckel, Heiligenhaus, and Horst G. Joseph, Essen, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Fed. Rep. of Germany

Filed Dec. 28, 1979, Ser. No. 108,008
Claims priority, application Fed. Rep. of Germany, Jan. 2, 1979, 2900079
Int. Cl.³ C10B *39/04, 39/08, 45/00*
U.S. Cl. 202—227 **4 Claims**



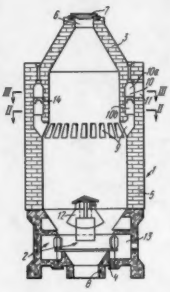
1. In a coke quenching system, the combination comprising a coke quenching car for receiving hot coke from a coke oven and transferring it from the coke oven, a hood located in close proximity above the quenching car, means for moving the hood independently of but with the quenching car, the hood including in the interior thereof means for spraying the coke and the quenching car with water, and conduit means communicating with the movable hood to exhaust the steam resulting from quenching of the coke from inside the hood and conduct the steam to a stationary treating station without venting of the steam to the atmosphere there between.

4,282,069

COKE DRY QUENCHING APPARATUS

Alexandr N. Minasov, ulitsa Ivanova, 12/16. kv. 59; Evgeny P. Likhogub, ulitsa Slinko, 2, kv. 11, and Vasily S. Kononenko, prospekt 50-letia SSSR, 12, kv. 81, all of Kharkov, U.S.S.R.

Filed Jul. 22, 1980, Ser. No. 171,164
Int. Cl.³ C10B *39/02*
U.S. Cl. 202—228 **4 Claims**



1. A coke dry quenching apparatus comprising:
(a) a vertical chamber having
a roof with a charging hole;
a bottom with a discharging gate;
walls in which are disposed an annular collector with a common gas withdrawal conduit, and a plurality of gas peripheral conduits communicating the inner space of the chamber with said annular collector;
a horizontal partition having ports and being installed within said annular collector so that the hollow thereof is divided into a lower cavity communicated with said gas peripheral conduits, and an upper cavity communicated with said common gas withdrawal conduit; and
(b) a quenching gas feeding means disposed in the lower portion of said chamber.

4,282,070

ENERGY CONVERSION METHOD WITH WATER RECOVERY

Dan Egosi, 7 Ben Gurion Blvd., Tel Aviv, Israel

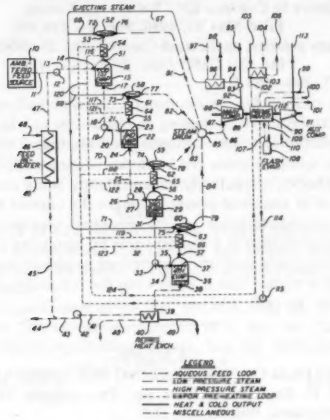
Filed May 30, 1978, Ser. No. 910,098
Int. Cl.³ C02F *1/04;* F22D *1/00*
U.S. Cl. 203—11 **55 Claims**

1. A process of continuously generating heat energy, cooling capacity and pure water from an available aqeuous feed medium, the process comprising:
introducing a continuous flow of an aqueous liquid feed medium from a source at an initial temperature into at least one enclosed region maintained at an under-pressure below the boiling pressure of said medium at the initial temperature;
evaporating part of the water in the aqueous feed medium inside the region by extracting at least a part of the heat of vaporization from the remainder of the aqueous medium;
withdrawing water vapor evaporated from the feed medium in the region;
compressing the withdrawn vapor to a predetermined output pressure;
delivering at least part of said compressed withdrawn vapor as a first source of output heat energy and as a source of pure output water; and

discharging continuously the cooled remainder of the aqueous feed medium from the region as a source of cooling capacity,

wherein the improvement comprises:

the step of withdrawing water vapor from the region comprises supplying a jet of ejecting steam for evacuating water vapor evaporated from the feed medium in the region into a combined flow with said jet of ejecting steam; and

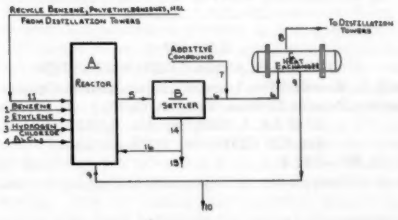


the step of compressing the withdrawn vapor comprises thermo-compressing the vapor by means of the ejecting steam jet in a converging-diverging throat to a first pressure, intermediate between the pressure maintained in the region and the final output pressure, and then mechanically compressing the combined thermo-compressed vapor and ejecting steam from the first pressure to the output pressure.

4,282,071
ANHYDROUS SEPARATION OF VOLATILE ALUMINUM CHLORIDE COMPLEX FROM AN ETHYLBENZENE PRODUCTION STREAM BY DISTILLATION

Fred A. Sherrod, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 25, 1977, Ser. No. 790,517
Int. Cl.³ B01D *3/34*
U.S. Cl. 203—38 **26 Claims**



1. A process for the anhydrous separation of the volatile, organic aluminum chloride complex from ethylbenzene both of which are contained in an ethylbenzene production stream, said process comprising:

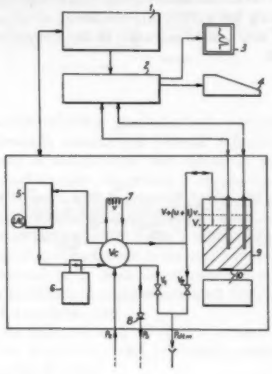
a. adding to the production stream a compound capable of transforming the volatile aluminum chloride complex into an aluminum chloride product which is essentially non-volatile at the temperature and pressure at which the ethylbenzene will distill; and

b. distilling the production stream at a temperature sufficient to cause the volatilization of the ethylbenzene.

4,282,072
METHOD FOR AUTOMATIC INDUSTRIAL ELECTROCHEMICAL ANALYSIS

Michel Barbelet, Lyons; Jean-Pierre Caujolle, Ste Foy les Lyon; Claude Scramoncin, St Priest, and Edmond Thibault, Saint Chamond, all of France, assignors to ELF France, Paris, France

Filed Sep. 17, 1979, Ser. No. 75,998
Claims priority, application France, Sep. 18, 1978, 78 26653
Int. Cl.³ G01N *27/42*
U.S. Cl. 204—1 T **5 Claims**



1. A method for automatic titration of a plurality of samples by argentimetric coulometry which comprises: automatically introducing a predetermined volume v of a sample, containing a substance A to be titrated, and a predetermined volume uv of an electrolyte, into a coulometric titration zone containing a known volume V of a mixture of electrolyte and sample at the potential of equivalence, said volume V being left over from a prior sample, and wherein the reaction volume held in the titration zone is equal to $V+(u+1)v$, the ratio of sample to electrolyte equal to u; coulometrically titrating the sample in the titration zone by producing a determined quantity of substance B and following the reaction between substances A and B by potentiometry wherein A is the substance in the sample whose quantity is to be determined and B is the substance which reacts with A which is generated in the coulometric titration zone and repeating said titration a plurality of times, wherein said volume V remains substantially constant from sample to sample.

4,282,073
ELECTRO-CO-DEPOSITION OF CORROSION RESISTANT NICKEL/ZINC ALLOYS ONTO STEEL SUBSTRATES

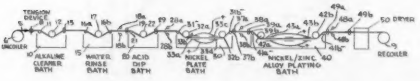
Theodore A. Hirt, and Robert H. Dillon, both of Warren, Ohio, assignors to Thomas Steel Strip Corporation, Warren, Ohio

Filed Aug. 22, 1979, Ser. No. 68,877
Int. Cl.³ C25D *3/56, 5/04, 5/12*
U.S. Cl. 204—28 **16 Claims**

1. A process for plating a protective corrosion-resistant coating on iron or steel substrates which comprises the steps of immersing the substrates in a plating bath solution having a combined dissolved metal content consisting of nickel and zinc in the range of 10 to 25 ounces per gallon of plating bath; wherein the ratio of nickel to zinc in said bath is in the range of

0.1:1 to 0.4:1; the nickel content of said bath is in the range 1.4 to 3.5 ounces per gallon, the balance of metal being dissolved zinc present in said plating bath solution in the range 8.4 to 21 ounces per gallon; said bath having a pH in the range 2.3 to 4.5; said bath being maintained at a temperature in the range 135° F. to 145° F.; and subjecting said iron substrate to a cathodic plating current density in the range 30 to 120 amperes/ft^2 until the nickel/zinc alloy coated on said substrate is in the range of 0.000005 to 0.0005 inches in thickness; said alloy having a nickel content of 10% to 15%, the balance being zinc and said coating providing a corrosion resistance to said substrate in excess of 0.5 hour per microinch of nickel/zinc alloy by the Salt Spray Test.

4. The method of plating protective corrosion-resistant layers on iron or steel substrates according to claim **1** wherein the nickel/zinc alloy coating is underlaid with a substantially pure nickel priming coat having a thickness in the range 0.000005 to 0.00005 inches whereby said composite corrosion-resistant coating has a corrosion-resistance to salt spray at least twice that of said coated substrate in the absence of the nickel priming layer.



7. The method of plating protective corrosion-resistant coatings according to claim **4** wherein said process is continuous and said iron substrate is a steel strip which comprises the steps of causing said strip to traverse a first section comprising an aqueous nickel salt-containing bath wherein said strip is made cathodic as it passes through said bath; maintaining an electroplating current density to said cathodic strip in said first section sufficient to deposit from said bath a substantially pure nickel priming layer of a thickness of from 0.000005 to 0.00005 inches; then immersing said strip in a second section containing an alloy plating solution having a combined dissolved metal content of nickel and zinc in the range 10 to 25 ounces per gallon and wherein the ratio of nickel to zinc in said solution ranges from 0.1:1 to 0. 4:1 and the nickel content of said bath is in the range 1.4 to 4.4 ounces per gallon; said bath having a pH in the range 2.3 to 4.5; and then electroplating at a temperature in the range 135° F.–145° F., an alloy layer of thickness 0.00005 to 0.0005 inches at a current density in the range of 40–110 amperes per square foot.

4,282,074

ELECTROLYTIC PROCESS UTILIZING A TRANSITION METAL-GRAPHITE INTERCALATION COMPOUND CATHODE

Donald W. Du Bois, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 7, 1980, Ser. No. 165,995
Int. Cl.[3] **C25B** *1/34, 11/12*
U.S. Cl. 204—98 **8 Claims**

1. In a method of electrolyzing an alkali metal chloride brine in an electrolytic cell having an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, and an ion permeable separator therebetween, which method comprises feeding the brine to the anolyte compartment, passing an electrical current from the anode to the cathode, and recovering chlorine from the anolyte compartment and alkali metal hydroxide solution from the catholyte compartment, the improvement wherein the cathode comprises an intercalation compound comprising graphite and transition metal component.

4,282,075

ELECTRODEPOSITION OF METALS

Edward G. Baggio, and Clifford J. Krauss, both of Trail, Canada, assignors to Cominco Ltd., Vancouver, Canada

Filed May 15, 1980, Ser. No. 149,960
Claims priority, application Canada, Jan. 28, 1980, 344488
Int. Cl.[3] **C25C** *1/06, 1/08, 1/10, 1/12*
U.S. Cl. 204—105 R **20 Claims**

1. A method for the electrolytic deposition of metals using an electrolytic cell containing an electrolyte in which a multiplicity of electrodes, consisting of alternate, substantially equally spaced anodes and cathodes is immersed, the anodes and cathodes, respectively, independently being connected to a source of electrical power; wherein the current between at least one end electrode and its immediate neighbouring electrode is controlled at a desired value by increasing the spacing of the end electrode from its immediate neighbouring electrode to a value higher than that between the remainder of the electrodes in the cell.

4,282,076

METHOD OF VISBREAKING POLYPROPYLENE

Donald E. Boynton, Kennett Sq., Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sep. 17, 1979, Ser. No. 76,054
Int. Cl.[3] **C08J** *3/28*
U.S. Cl. 204—159.2 **13 Claims**

1. A process for preparing an environmentally stable plastic composition by visbreaking a propylene polymer to controllably reduce its molecular weight, using an activated portion of said propylene polymer as a prodegradant, which process comprises:

forming a prodegradant by activating a first portion of propylene polymer by exposure to ionizing radiation;

incorporating said prodegradant into a second portion of propylene polymer, wherein said second portion is at least as large as said first portion;

adding to the mixture of said first and second portions of said propylene polymer a stabilizing amount of an antioxidant; and

visbreaking said mixture by shear mixing in an extruder while heating said mixture to an extrusion temperature between about 200° C. and 300° C. to controllably lower the molecular weight of said mixture and narrow the molecular weight distribution, while substantially retaining the stabilizing effect of said antioxidant stabilizer.

4,282,077

UNIFORM PLASMA ETCHING SYSTEM

Joseph A. Reavill, Mira Loma, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jul. 3, 1980, Ser. No. 165,821
Int. Cl.[3] **C23F** *1/00;* **H01L** *21/306*
U.S. Cl. 204—192 E **9 Claims**

1. A uniform plasma etching system comprising in combination:

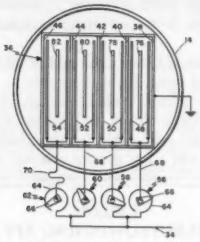
a chamber;

a source of reactive gas for supplying to said chamber;

an RF generator coupled to said chamber for generating a plasma therein; and

a plurality of part cells within said chamber formed by pairs of generally opposed electrodes of the same polarity and plasma cells at each side of said part cells, each of said part cells being separated from each adjacent part cell by a

plasma cell, each of said plasma cells being defined by adjacent generally opposed electrodes of opposite polarity



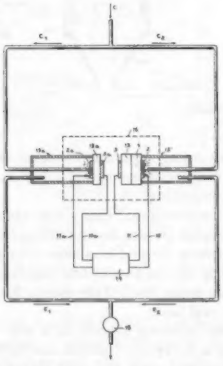
positioned to generate plasma externally of the adjacent part cell.

4,282,078

SOLID STATE SENSOR FOR ANHYDRIDES

Andre M. Chamberland, Boucherville, and Michel Gauthier, Laprairie, both of Canada, assignors to Hydro-Quebec, Montreal, Canada

Continuation-in-part of Ser. No. 472,904, May 23, 1974, abandoned. This application Aug. 30, 1976, Ser. No. 718,511
Claims priority, application Canada, Aug. 29, 1975, 234646
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—195 S **16 Claims**



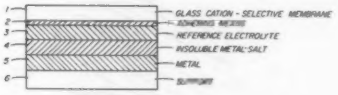
1. A sensor for accurately detecting the activity of gaseous anhydrides in an oxygen-bearing gas, comprising a solid state electrolyte element having oxyanions corresponding to the anhydride to be detected; a reference electrode being in contact with said electrolyte element, a detection electrode remote from said reference electrode and also in contact with the electrolyte element; said electrolyte and detection electrode being arranged such that they are free to come into contact with said gaseous anhydride, said reference and detection electrodes being arranged such that a difference of potential occurs between said reference and detection electrodes when a sample of said anhydride to be detected is contacted with said detection electrode and with said electrolyte material; heating means for heating said electrolyte element to a temperature such that a logarithmic variation in the concentration of the anhydride to be detected causes a portional and substantially linear variation in said difference of potential, said temperature being below the fusion temperature of said electrolyte element; and a potentiometric measurement device connected to said electrodes for measuring the activity of said anhydride to be detected by measuring said difference of potential wherein at least one solid material is sealing fixed to said electrolyte material and said solid material has at least two channels bored therethrough, wherein said two channels are in gas communication with each other by way of a passage at one extremity of said two holes, one of said electrodes being located in said passage.

4,282,079

PLANAR GLASS ION-SELECTIVE ELECTRODE

Jack C. Chang, Webster, and James R. Sandifer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 13, 1980, Ser. No. 121,080
Int. Cl.³ G01N *27/36*
U.S. Cl. 204—195 G **10 Claims**



1. A planar ion-selective glass electrode comprising:
(a) an inherently conductive internal reference electrode comprising a metal/metal salt reference material, said reference electrode comprising a conducting layer of a metal in contact with a layer of an insoluble salt of said metal, and an inherently conductive adhesive electrolyte layer comprising a water-soluble salt having as an anion the anion of said metal salt layer and a polymeric binder;
(b) a cation-selective glass membrane of predetermined uniform thickness in regions intended for contact with a sample for analysis; and
(c) means for adhering said reference electrode to said glass membrane comprising said inherently conductive adhesive electrolyte layer.

6. A planar ion-selective glass electrode comprising:
(a) an inherently conductive redox internal reference electrode comprising an inherently conductive, adhesive redox couple layer comprising a redox couple and a binder over an electrically conducting layer;
(b) a cation-selective glass membrane of predetermined uniform thickness in a region thereof intended for contact with a sample for analysis; and
(c) means for adhering said reference electrode to said glass electrode comprising said inherently conductive, adhesive redox couple layer.

4,282,080

ELECTROCHEMICAL SENSOR, PARTICULARLY FOR OXYGEN DETERMINATION IN COMBUSTION GASES

Klaus Müller, Tamm; Ernst Linder, Mühlacker; Helmut Mauer, Schwieberdingen; Karl-Hermann Friese, Leonberg; Franz Rieger, Aalen, and Heinz Geier, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,632
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909452
Int. Cl.³ G01N *27/58*
U.S. Cl. 204—195 S **13 Claims**

1. Electrochemical sensor, particularly for determination of oxygen content in combustion gases, especially from an internal combustion engine, having
a metal housing (13) formed with a longitudinal opening therethrough;
an elongated plate-like sensing element (11) having a sensing portion at one end thereof adapted to be exposed to the gases, a terminal portion at the other end for connection to an external circuit, and an intermediate portion, said plate-like sensing element being secured and sealed in said housing at said intermediate portion, with the sensing portion

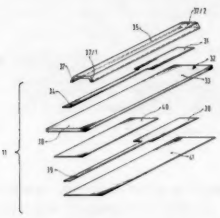
thereof projecting from the intermediate portion and being exposed to the gases;

said sensing element (**11**) including

an oxygen ion conductive solid electrolyte body (**32**, **43**) in form of an essentially plane flat plate;

a reference electrode (**31**, **46**) applied to one major surface (**33**) thereof;

an electron conductive sensing electrode (**30**) applied to the other major surface thereof and located opposite the reference electrode, the reference electrode being exposed to a reference substance having a predetermined oxygen partial pressure to provide a reference level,



conductor means (**39**, **34**) extending from said electrodes to the terminal portion,

and a trough-like cover element (**35**, **50**) having a concave inner surface covering the reference electrode (**31**, **46**), secured to said one major surface of the solid electrolyte body (**32**, **43**) with the concave surface facing said one major surface of the reference electrode, defining a chamber (**36**, **51**) therebeneath and providing for clearance between the reference electrode and the inner surface of the trough-like cover element,

said reference substance being located in said chamber.

4,282,081

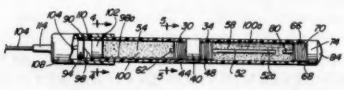
DOUBLE JUNCTION REFERENCE ELECTRODE

Frank C. Arrance, Sr., Costa Mesa, Calif., assignor to Graphic Controls Corp., Buffalo, N.Y.

Filed Jul. 10, 1980, Ser. No. 167,768

Int. Cl.[3] **G01N** *27/30*

U.S. Cl. 204—195 F **10 Claims**



1. A double junction reference electrode providing a precise and reproducible reference potential stable over at least a 24-hour time period,

said electrode comprising

a pair of in-line coaxial, vertically-oriented sealable, tubular fluid compartments including an upper compartment and a lower compartment each adapted to retain an electrically conductive chemical composition therein,

joinder means coaxial with said upper compartment and with said lower compartment and interposed therebetween for mechanically and dissociably intercoupling said compartments in fluid-tight interengagement with one another,

fluid-retentive, fluid-flow-restricting first conduit means supported by and extending axially through said joinder means for providing an ion-permeable electrically conductive fluid path between said upper compartment and said lower compartment,

cap means surmounting said upper compartment for sealing an upper open end thereof, to provide a fluid-tight closure therefor,

electrically conductive external cable means sealed into to extend through said cap means in electrically conductive communication with said upper compartment interiorly thereof,

plug means sealing a lower open end of said lower compartment as a fluid tight closure therefor,

fluid permeable second conduit means extending axially through said plug means for providing an electrically conductive fluid-permeable junction between said lower compartment and a test system exterior of said electrode.

4,282,082

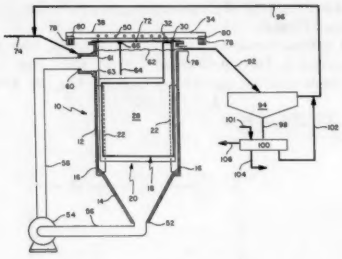
SLURRY ELECTROWINNING APPARATUS

Robert D. Cook, Farmington; Robert C. Emmett, Jr., Salt Lake City; Bruce C. Wojcik, Kearns, and Frank A. Baczek, Sandy, all of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Jan. 29, 1980, Ser. No. 116,507

Int. Cl.[3] **C25D** *21/10*; **C25C** *1/12*, *7/00*, *7/02*

U.S. Cl. 204—237 **13 Claims**



1. An electrowinning apparatus for recovering copper from a slurry comprising copper-bearing solids and an electrolyte, the apparatus comprising:

a. a tank for containing said slurry, said tank having alternating spaced-apart anodes and cathodes mounted therein;

b. an inlet opening formed in a side of said tank, at a level above the top of said anodes and cathodes and adapted to be below the upper level of the slurry, for introducing said slurry into said tank;

c. an overflow opening formed in a side of said tank for maintaining a slurry level within said tank which is above said inlet opening such that said slurry is introduced to said tank below said level;

d. a tank bottom including means to recirculate a portion of said slurry from said tank bottom to the inlet opening; and

e. electrical bussing in contact with said anodes and cathodes for providing electric current to same such that when current is passed therebetween through said slurry, copper deposits upon said cathodes.

4,282,083

PENNING SPUTTER SOURCE

Gabor Kertesz, and György Vago, both of Budapest, Hungary, assignors to Hirada Stechnikai Ipari Kutato Intezet, Budapest, Hungary

Filed Feb. 13, 1980, Ser. No. 121,135

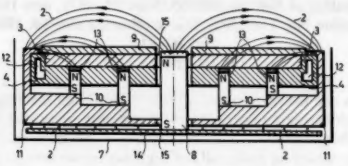
Claims priority, application Hungary, Feb. 19, 1979, HI 507

Int. Cl.[3] **C23C** *15/00*

U.S. Cl. 204—298 **13 Claims**

1. A Penning sputter source comprising a screen system forming an outer housing, an anode, a cathode, an exciting magnet, and a cooling system positioned within said housing, said cathode being separated from said anode and forming a target, said cooling system being connected to said target, a

magnetic conductor magnetically coupled to said exciting magnet and separated therefrom, and at least one auxiliary magnet is situated on said magnetic conductor, wherein said at least one auxiliary magnet has a lower magnetic intensity than said exciting magnet and its upper level lies under the upper level of said exciting magnet.



4,282,084

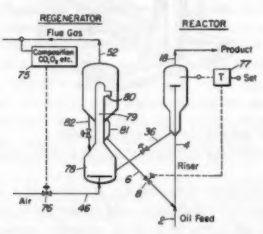
CATALYTIC CRACKING PROCESS

Benjamin Gross, and Wooyoung Lee, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 946,004, Sep. 27, 1978, abandoned, which is a continuation of Ser. No. 830,955, Sep. 6, 1977, abandoned, which is a continuation of Ser. No. 651,109, Jan. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 529,055, Dec. 3, 1974, Pat. No. 3,960,707, which is a division of Ser. No. 472,525, May 23, 1974, abandoned. This application Apr. 7, 1980, Ser. No. 137,877

Int. Cl.[3] C10G *11/18*

U.S. Cl. 208—113 **12 Claims**



1. In a process for the fluid catalytic cracking of a hydrocarbon oil in the absence of added hydrogen to produce products boiling in the gasoline and the fuel oil range, said process comprising contacting said hydrocarbon oil with a regenerated, porous acidic solid catalyst in a cracking vessel under conditions effective to convert said oil to said products and deposit coke on said catalyst; transferring said coked catalyst to a regeneration vessel wherein in a dense fluid bed of catalyst is maintained at an elevated temperature and burning at least a portion of said coke in the presence of an oxygen containing gas with production of carbon dioxide and carbon monoxide in said dense bed, said production being characterized by a CO_2/CO ratio; and recycling regenerated catalyst from said regeneration vessel to said cracking vessel to catalyze further cracking and supply at least part of the heat required for said cracking, the improvement in control of said regenerator which comprises:

selecting a temperature within the range of about 1200° to about 1350° F. for operation of said dense bed;

adding to said circulating catalyst a metal promoter selected from the group consisting of Pt, Pd, Rh, Ir, Os and Re in an amount effective to produce a CO_2/CO ratio within the range of 1 to 6;

determining the deviation of the temperature of the dense bed with metal promoter from said selected temperature; and

adjusting the flow rate of the oxygen containing gas in the direction to reduce said deviation.

4,282,085

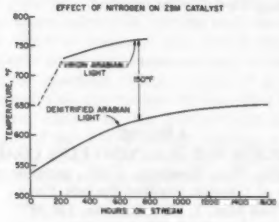
PETROLEUM DISTILLATE UPGRADING PROCESS

Dennis J. O'Rear, Tiburon, and Jerome F. Mayer, San Anselmo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 954,062, Oct. 23, 1978, Pat. No. 4,171,257. This application May 21, 1979, Ser. No. 41,209

Int. Cl.[3] C10G *11/05, 25/03*

U.S. Cl. 208—120 **9 Claims**



1. A process for upgrading a petroleum distillate feed consisting essentially of hydrocarbons having a normal boiling point range in the range of from about 400° to 1000° F. and producing C_3–C_4 olefins, based upon feed converted, in an amount in the range of from about 2 to 10 weight percent, comprising producing an effluent stream containing C_3–C_4 olefins by contacting said feed with a catalyst comprising ZSM-5-type crystalline aluminosilicate zeolite in a form which is substantially free of hydrogenation activity, said contacting being under conditions including (a) a temperature in the range of from about 500° to 800° F.; (b) a pressure below about 13 atmospheres gauge; and (c) a liquid hourly space velocity in the range of from about 0.1 to 15, said feed having a content of nitrogen-containing impurities, calculated by weight as nitrogen, below about 5 ppm.

4,282,086

REFORMING WITH MULTIMETALLIC CATALYSTS

Paul E. Eberly, Jr., Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 969,548, Dec. 14, 1978, Pat. No. 4,213,881, which is a continuation-in-part of Ser. No. 862,114, Dec. 19, 1977, Pat. No. 4,148,758, and Ser. No. 862,116, Dec. 19, 1977, Pat. No. 4,151,115, each , said Ser. No. 862,114, and Ser. No. 862,116, is a continuation-in-part of Ser. No. 826,996, Aug. 23, 1977, abandoned. This application Sep. 27, 1979, Ser. No. 79,577

Int. Cl.[3] C10G *35/06*

U.S. Cl. 208—139 **3 Claims**

1. In a process for reforming a hydrocarbon feed at reforming conditions which comprises contacting said feed with a catalyst which comprises a Group VIII noble metal hydrogenation-dehydrogenation component, a component comprised of iridium, rhenium, or both, and a halogen component, the improvement wherein the catalyst also contains sufficient selenium, and sulfurous acid or sulfuric acid, or both, as components to increase the activity or selectivity, or both, as contrasted with a catalyst otherwise similar except that it does not contain selenium, and sulfurous acid or sulfuric acid, or both, as components.

4,282,087
SELECTIVE FLOCCULATION FOR IRON VALUES

Richard M. Goodman, Norwalk, and Hans P. Panzer, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

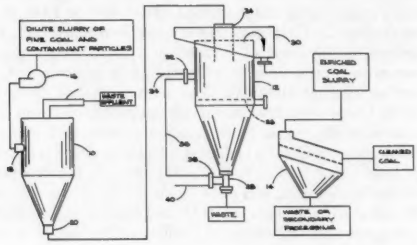
Filed May 21, 1979, Ser. No. 41,031
Int. Cl.[3] B03D *3/06*
U.S. Cl. 209—5 **2 Claims**

1. A process for recovering iron values from a mixture of hematitic ore and its gangue material which comprises:
(a) slurrying a finely ground hematitic ore in water;
(b) treating said slurry with an effective amount of a hydroxymethylated polyacrylamide wherein the hydroxymethylated polyacrylamide has a molecular weight in excess of six million and has a degree of hydroxymethylation in excess of about 90%.
(c) settling the iron values as an underflow concentrate; and
(d) recovering the iron concentrate.

4,282,088
PROCESS FOR CLEANING FINE COAL

Robert E. Ennis, West Simsbury, Conn., assignor to Linatex Corporation of America, Stafford Springs, Conn.

Filed Mar. 3, 1980, Ser. No. 126,287
Int. Cl.[3] B03B *7/00, 5/66*
U.S. Cl. 209—17 **10 Claims**



1. A process for the wet concentration and cleaning of fine coal comprising the steps of introducing a feed slurry of coal and associated contaminant particles having an average particle size predominantly less than about 6 mm to a hydrocyclone separator having an ascending vortex finder and an underflow discharge port, regulating the discharge from the discharge port to provide controlled discharge at said port of a coal particle fraction having a particle size greater than about 0.1 mm while discarding substantially all the fine silt of less than 0.1 mm reporting to the ascending vortex finder, introducing the controlled discharge of greater particle size to the upper end of a dense medium separation vessel having a manifold for injecting water at an intermediate level and having a variable orifice at its lower end for releasing the heavier particles therefrom, controlling the effective size of the orifice at the lower end for maintaining a fluidized bed of heavier than coal contaminant particles extending upwardly from the lower end of the vessel whereby heavier contaminant particles in the feed slurry may enter and pass downward for removal while the portion of the feed slurry containing only the lighter particles of coal and very small heavier contaminant will be suspended above said fluidized bed for selective recovery and introducing the latter slurry to a concentrating and dewatering screen to release water and particles having a size of the order of 0.25 mm or less and thereby recovering the cleaned and dewatered coal fraction of the feed slurry.

4,282,089
PHOSPHATE FLOTATION WITH TRIBASIC ACIDS

Shuang-Shii Hsieh, Florence, and Dennis G. Brooks, Auburn, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

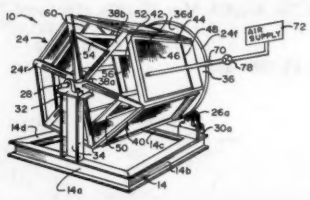
Continuation of Ser. No. 93,355, Nov. 13, 1979, now Defensive Publication No. T100,302. This application Jul. 14, 1980, Ser. No. 168,913
Int. Cl.[3] B03D *1/02*
U.S. Cl. 209—166 **2 Claims**

1. An ore flotation process which comprises the steps of
(1) subjecting a phosphate ore containing silica and silicates to froth flotation in the presence of a collector, said collector consisting essentially of high molecular weight tribasic acids comprising three carboxylic groups;
(2) recovering the phosphate ore concentrate from the overflow; and
(3) removing the separated silica and silicates in the underflow.

4,282,090
ROTARY SIFTING DEVICE

August B. Hoernschemeyer; Alan L. Zinser, both of St. Louis County, and John F. Myers, Jefferson County, all of Mo., assignors to St. Louis Conveyor Company Inc., St. Louis, Mo.

Filed Jun. 20, 1980, Ser. No. 155,211
Int. Cl.[3] B07B *1/24, 1/55*
U.S. Cl. 209—291 **12 Claims**

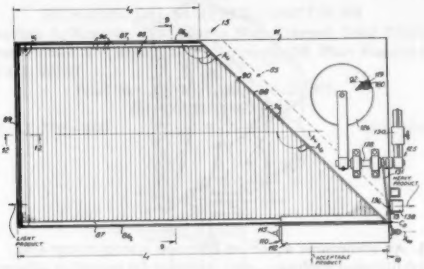


1. A rotary sifting device, comprising:
a disc mounted for rotation at a first end of said rotary sifting device;
a spider structure mounted for rotation at a second end of said rotary sifting device, said spider structure including a plurality of arms extending radially outwardly from a central hub;
a first screened enclosure mounted between said spider structure and said disc for rotation therewith, said first screened enclosure including a sizing screened portion;
a second screened enclosure mounted between said spider structure and said disc for rotation therewith and mounted concentrically inboard of said first screened enclosure, said second screened enclosure including a sizing screened portion and a baffle member portion, said baffle member portion defining an inlet for said rotary sifting device, said baffle preventing material entering said device at said second screened enclosure from impinging directly upon said second screened enclosure and for imparting rotational movement to said material prior to the introduction thereof onto the sizing screened portion of said second screened enclosure;
a pressurized air supply line having a plurality of nozzles directed radially inwardly toward said first screened enclosure, said nozzles including an outlet part axially aligned with each other outlet part of said nozzle plurality so as to direct a continuous axial air current radially inward of said first screened enclosure along the entire sizing screened portion of said first screened enclosure;
means for rotating at least one of said spider structure and said disc; and
means for generating an air current through said nozzles to disengage material lodged in said first screened enclosure.

4,282,091
PEANUT SEPARATOR

Lewis M. Carter, Sr., Donalsonville, Ga., assignor to Lewis M. Carter Mfg. Co., Inc., Donalsonville, Ga.

Filed Oct. 10, 1979, Ser. No. 83,412
Int. Cl.³ B03B *4/00*
U.S. Cl. 209—467 **9 Claims**



1. A separator for separating granular materials according to specific weight including:

a deck having a longitudinal axis and including a perforated screen; a first upstanding short side wall along one side of said screen parallel to the longitudinal axis; a second upstanding long side wall along the opposite side of said screen parallel to the longitudinal axis and having a length greater than said short side wall; an upstanding banking wall extending across one end of said screen between said first and second side walls and defining an obtuse angle with the longitudinal axis; and an upstanding discharge end wall extending across the opposite end of said screen between said first and second side walls oriented normal to the longitudinal axis and having a height less than said first and second side walls and said banking wall; said screen, said first and second side walls, said banking wall and said discharge end wall defining an open top separating chamber in said deck for supporting a bed of the granular material therein, said long side wall defining a first elongate discharge opening therethrough adjacent the juncture of said long side wall and said banking wall, said first discharge opening having a lower edge spaced a first prescribed distance above said screen, said banking wall defining a second discharge opening therethrough adjacent the juncture of said banking wall and said long side wall, said second discharge opening extending upwardly from said screen for a second prescribed distance less than said first prescribed distance;

a bottom air plenum below said screen in said deck and connected thereto in a sealed relationship therewith;

fan means for forcing air into said bottom air plenum so as to force air upwardly through said perforated screen and the bed of granular material carried on said screen to fluidize the bed and cause stratification of the granular material in the bed according to the specific weight thereof;

feed means for directing the granular material into the open top separating chamber to form a bed of the granular material in said separating chamber supported on top of said screen;

tilt means for adjustably tilting said deck until that end of said screen at said banking wall is higher than that end of said screen at said discharge end wall;

vibratory means for reciprocating said deck along the longitudinal axis thereof and oscillating said deck about a generally vertical axis while air is forced upwardly through said screen to separate the granular material in said separating chamber into a first fraction, a second fraction heavier than the first fraction, and a third fraction heavier than the second fraction where the third fraction settles onto said screen and is moved toward said banking wall under said first discharge opening, where the second fraction settles toward said screen and is moved toward said banking wall and where said first fraction is moved toward said discharge wall, said banking wall arresting the movement of the third fraction toward said banking wall to cause the third fraction to accumulate along said banking wall in registration with said second discharge opening, said banking wall arresting the movement of the second fraction toward said banking wall to cause the second fraction to accumulate adjacent said banking wall over the accumulated third fraction and be maintained in registration with said first discharge opening with the accumulated second fraction having a decreasing depth in a direction from said banking wall toward said discharge end wall; and

pneumatic pressure operated gate means selectively covering said discharge opening so as to selectively control the flow of the granular material therethrough in response to the pneumatic pressure in said bottom air plenum, said gate means selectively varying both the effective height and effective length of said first discharge opening in response to the pneumatic pressure below said deck so that the maximum effective height of said first discharge opening is always toward that end of said first discharge opening closest to said banking wall and the effective length of said first discharge opening is increased from that end of said first discharge opening closest to said banking wall toward the other end thereof.

4,282,092
PROCESS FOR PREPARING INORGANIC PARTICULATE ADSORBENT AND PROCESS FOR TREATING NUCLEAR REACTOR CORE-CIRCULATING WATER

Kazunori Fujita, Ibaraki; Shigeo Uno, Hitachi; Seizi Takeuchi, Hitachiota, and Hisao Yamashita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,468
Claims priority, application Japan, Sep. 29, 1978, 53-119255
Int. Cl.³ C02F *1/42;* **B01J** *21/04, 21/06*
U.S. Cl. 210—682 **22 Claims**

1. A process for preparing an inorganic particulate adsorbent of a titania-alumina system for treating superheated water containing radioactive materials, which comprises:

(1) hydrolyzing a titanium alkoxide and an aluminium alkoxide, thereby forming a hydrous titanium oxide and a hydrous aluminum oxide, respectively,

(2) precalcining the hydrous titanium oxide and the hydrous aluminum oxide, thereby forming titania and alumina,

(3) mixing and molding the resulting titania and alumina, thereby preparing a particulate mixture of titania and alumina, and

(4) calcining the resulting particulate mixture in an oxidative atmospheres.

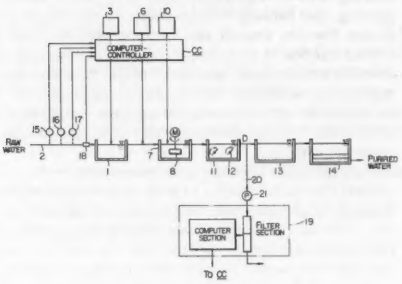
4,282,093
APPARATUS FOR DETECTING COAGULATION EFFECT

Teturo Haga, and Takashi Ikeguchi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1979, Ser. No. 55,464
Claims priority, application Japan, Jul. 5, 1978, 53-81006
Int. Cl.³ B01D *21/01;* **C02F** *1/52*
U.S. Cl. 210—90 **10 Claims**

1. An apparatus for detecting a coagulation effect in a water purification plant, which comprises means for introducing a dose of a coagulant into raw water to form floc of turbidity-causing suspended particles, a flocculation basin for receiving the raw water containing said coagulant and for allowing growth of said floc, a sedimentation basin for separating the grown floc, means for leading the water containing the grown floc to said sedimentation basin to separate the grown floc by sedimentation, thereby purifying the raw water, means for by-passing a portion of the water containing the grown floc

and being led to the sedimentation basin from said flocculation basin through a filter means, said filter means containing a layer of filter medium and having a filtration pressure detection point means at a specific level in the filter medium layer,



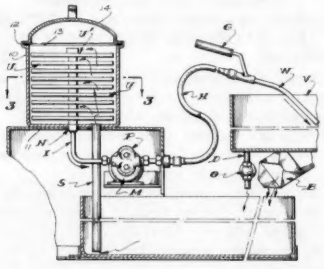
means for monitoring a rate of change in filter pressure and for detecting an improper dosage of the coagulant into said raw water in correlation to a rate of change in filtration pressure within said filter medium layer and means for signaling an improper dosage of coagulant.

4,282,094

FILTERING APPARATUS

Edson Mitchell, Northridge, Calif., assignor to Charles F. Betz, Arcadia, Calif.

Filed Jan. 7, 1980, Ser. No. 109,981
Int. Cl.³ B01D *29/24*
U.S. Cl. 210—167 **10 Claims**



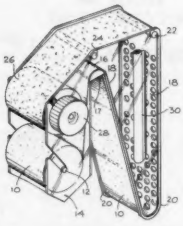
1. An oil filtering and purifying apparatus comprising a receptacle open to atmosphere, a supply of oil ladened with particulate and gaseous impurities in the receptacle, a vessel opened to atmosphere to receive oil worked upon, a closed pressure tank with an inlet opening and an outlet opening; a fluid conductor communicating with and between the inlet opening and the supply of oil; a motor driven pump with inlet and outlet sides; a fluid duct between and communicating with said outlet opening and the inlet side of the pump; a fluid delivery line between and communicating with the outlet side of the pump and the vessel and a filter unit assembly in the tank and connected with the outlet opening, whereby oil in the tank flows through the assembly and particulate impurities are separated therefrom as it flows to said outlet opening, said pump operates to establish a negative pressure in the tank, whereby oil from the supply of oil flows into the tank and is acted upon by said minus pressure, whereby gaseous impurities separate therefrom and operates to draw oil in the tank through the filter unit assembly from the tank and thence into said vessel

4,282,095

AQUARIUM FILTERING SYSTEM

Parker I. Tsuhako, 1412 W. 148th St., Gardena, Calif. 90247

Filed Jan. 2, 1980, Ser. No. 109,166
Int. Cl.³ E04H *3/20*
U.S. Cl. 210—169 **10 Claims**



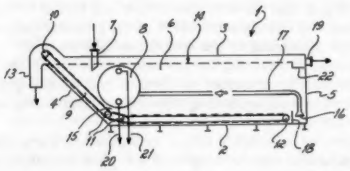
1. An immersible aquarium filtration system comprising:
(a) filtration medium supply structure for mounting adjacent an aquarium;
(b) expended filtration medium storage structure for mounting adjacent an aquarium;
(c) an immersible housing comprising:
(1) a first opposed pair of side walls; and
(2) a second opposed pair of perforated side walls, said opposed pairs of walls forming an immersible portion and an external portion extending laterally from the immersible portion to support said supply structure and said storage structure;
(d) filtration medium positioning guides locating said filtration medium over perforations of said perforated side walls;
(e) a fluid conduit independent of ambient fluid within said aquarium for controlling fluid level in said immersible housing, said immersible housing and filtration medium being structured so that the aquarium medium will only flow between interior and exterior of the housing by passing through the filtration medium; and
(f) means for advancing filtration medium between the supply and storage structures over said guides.

4,282,096

TAR SEPARATING DEVICE

Rudolf Burkert, Essen, Fed. Rep. of Germany, assignor to Didier Engineering GmbH, Fed. Rep. of Germany

Filed Aug. 18, 1980, Ser. No. 179,163
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 2934324
Int. Cl.³ B01D *21/12*
U.S. Cl. 210—182 **9 Claims**



1. A tar separating device for separating tar from a hot rinsing liquid comprising:
a container having a rinsing liquid inlet,
a solids removal device for removing solids from said liquid as said liquid enters said container,
a tar dewatering chamber located in said container near said inlet such that the rinsing liquid entering said container flows over the outer surface of said chamber,

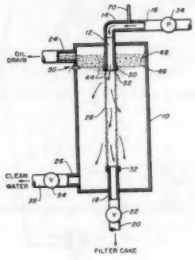
tube means in said container for conveying rinsing liquid into said tar separating chamber, the inlet to said tube means being located at point distant from said rinsing liquid inlet where said liquid is lower in temperature than at said inlet, means for removing tar from said container, and means for removing water from said container.

4,282,097

DYNAMIC OIL SURFACE COALESCER

Theodore A. Kuepper, 4907 Marlin Way, Oxnard, Calif. 93030, and Robert S. Chapler, 680 Evergreen, #4, Port Hueneme, Calif. 93041

Filed Sep. 24, 1979, Ser. No. 77,959
Int. Cl.³ B01D *25/32*
U.S. Cl. 210—200 **20 Claims**



1. Apparatus for treating water-based liquid waste mixtures comprising:

a stilling chamber for maintaining a volume of liquid within its boundaries in relatively still condition;

a water-permeable, fabric, tubular element having an inlet end and an outlet end, the inlet end coupled to receive said mixture under pressure;

means for introducing air into said liquid waste mixture prior to its input into said tubular element;

means for selectively controlling the passage of fluid through the outlet end of said element;

said means for controlling being capable of closing the outlet end of the element to prevent said mixture from flowing through said outlet end, the water in said mixture thereby being forced to pass through the fabric walls of said element, whereas solid particulates in said mixture are entrained on the inner surface of said fabric element;

said means for controlling being capable of opening said outlet end of the element to allow said mixture to flow through said outlet end to dislodge said particulates entrained on the inner wall of said element from said inner wall and to flush said particulates out of said element through said outlet end.

4,282,098

FILTER TOP HINGE

Howard W. Morgan, Jr., Michigan City, Ind., assignor to Filter Specialists, Inc., Michigan City, Ind.

Filed May 19, 1980, Ser. No. 150,791
Int. Cl.³ B01D *35/16*
U.S. Cl. 210—238 **3 Claims**

3. In a filter including a housing having an upper opening, a cap for spanning said housing upper opening, a liquid inlet into an outlet from said housing, a filtering element in said housing between said inlet and outlet, a plurality of securement means for releasably securing said cap to the housing when spanning said housing open end, the improvement wherein at least one of said securement means constitutes a hold-down hinge assembly, said housing includes spaced marginal tabs, said cap includes a tongue having a leg part movably fitting between said spaced marginal tabs, said cap tongue and spaced marginal tabs forming a part of said hold-down hinge assembly, said hold-down hinge assembly including a bolt having a threaded shank and a head having a transverse opening, a nut which is threadably compatible with said bolt, a pin, said pin anchored to said housing and passing through said bolt head opening with clearance, said bolt head located between said spaced marginal tabs with said pin extending from one tab to the other, said bolt being pivotal about said pin from an upright to a generally

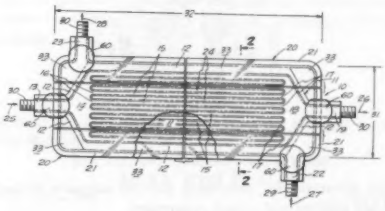
transverse position, a bore in said cap tongue, said bolt shank passing through said cap tongue, said nut threaded upon said bolt shank to secure said cap to the bolt, said nut being turnable against said cap when the cap spans said housing opening and said bolt is upright to secure the cap to the housing, said cap being pivotal about said pin from its housing opening spanning position into an elevated position in which said cap leg part will abut said housing with said nut loosened upon the bolt.

4,282,099

INTEGRAL PARTITIONED HEMODIALYSIS UNIT

John L. Jones, P.O. Box 233, Pasadena, Calif. 91102

Filed Dec. 10, 1979, Ser. No. 98,323
Int. Cl.³ B01D *31/00, 13/00*
U.S. Cl. 210—247 **6 Claims**



6. In a hemodialysis unit comprising a dialysis chamber having inlet and outlet dialysate ports and a pair of opposed sealed membrane sheets forming an integral blood perfusion unit having integral blood inlet and outlet ports, inlet and outlet blood manifolds, and multiple blood tubules disposed in parallel between said inlet and outlet manifolds, said integral blood perfusion unit having a length parallel to said parallel blood tubules, a width normal to said blood tubules, said membrane having high permeability to waste excreta products of patients, said blood perfusion unit disposed in the interior of said dialysis chamber, the combination comprising:

said membrane exterior margins of said blood perfusion unit adaptively sized and interiorily secured at all said membrane exterior margins to the bonded edge of said dialysate chamber, said membrane exterior margins bonded and positioned to provide two separate dialysate subchambers, a first dialysate subchamber having a first exterior face of said blood perfusion unit providing a first subchamber floor, and a second dialysate subchamber having a second

exterior opposed face of said blood perfusion unit providing a second subchamber ceiling,

said two dialysate subchambers having the cross sectional areas of said two subchambers adaptively sized and adaptively positioned to provide a high velocity flow of dialysate solution over the length of said two subchambers, and,

said two dialysate subchambers having one dialysate solution input nozzle having a septum providing a split dialysate solution input, and one solution output nozzle, said input and output solution nozzles adaptively positioned to provide a high velocity flow of dialysate solution over the length of said two subchambers, providing a high velocity sweep of the diffusional boundary layer from the two opposed exterior faces of the blood perfusion unit and providing a high rate of removal of waste excreta products from patient's blood.

4,282,100

APPARATUS FOR REFORMING FUEL OIL WHEREIN ULTRASONIC WAVES ARE UTILIZED

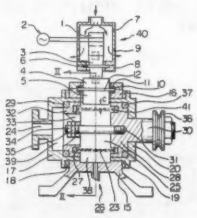
Misao Kunishio, Tokyo; Kenshi Shirai, Higashiyamato, and Hiroyuki Takezi, Tachikawa, all of Japan, assignors to The Sanko Steamship Co., Ltd., Osaka, Japan

Filed Sep. 5, 1979, Ser. No. 72,860

Claims priority, application Japan, Sep. 18, 1978, 53-114102; Aug. 29, 1979, 54-109220

Int. Cl.³ B01D *33/10*

U.S. Cl. 210—384 **11 Claims**



1. An apparatus for reforming fuel oil wherein ultrasonic waves are utilized and which comprises:

a closed vessel means;

a rotary collector means, shaped in a cylindrical form and having a layered mesh structure mounted on the cylindrical surface thereof for continuously collecting sludge contained in said fuel oil, which means is encircling an axis and is disposed rotatably about said axis within said vessel means so that said vessel means is partitioned into inlet and outlet chambers;

an inlet conduit, connected to said inlet chamber, for supplying fuel oil to be reformed to said vessel means;

an outlet conduit, connected to said outlet chamber, for delivering reformed fuel oil; and

a means for generating ultrasonic waves provided with a device for irradiating said ultrasonic waves, the end of which device is positioned adjacent to said layered mesh structure mounted on said rotary collector means so that said sludge collected on said cylindrical surface of said layered mesh structure is dissociated into particles by means of said ultrasonic waves being irradiated from said device.

4,282,101

FILTERING APPARATUS

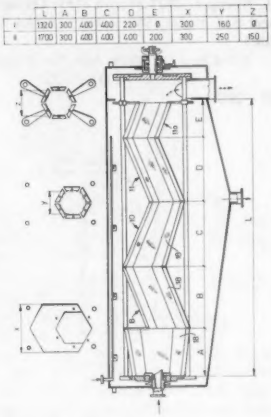
Istvan Takacs; Gyula Bosits; Endre Vereczkey, and György Kerey, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed Nov. 28, 1979, Ser. No. 98,042

Claims priority, application Hungary, Mar. 21, 1979, RI 699

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—403 **26 Claims**



	L	A	B	C	G	E	K	Y	Z
I	1320	300	400	400	220	8	300	160	9
II	1700	300	400	400	400	200	300	250	150

1. A filtering device comprising:

a horizontally elongated housing;

a filter body extending along said housing and disposed therein said filter body including:

an intake drum in the form of a frustum of polygonal cross section mounted in said housing for at least partial rotation about a substantially horizontal axis and having a polygonal small end plate proximal to one end of said housing and a polygonal large end plate spaced therefrom along said axis, said small end plate being provided with a first orifice concentric with said axis and said large end plate being provided with a second orifice eccentrically disposed with respect to said axis, said drum further having a surface provided with first filter means and joining a periphery of said small end plate to a periphery of said large end plate whereby said first filter means forms angularly adjoining walls of said frustum, and

a generally zig-zag-shaped tube of linear tube sections rigidly connected at one end to said large end plate at said second orifice for communicating with said drum and rotatably supported near an opposite end of said tube by said housing, said arms having respective surfaces provided with second filter means, said tube having an outlet at an opposite end of said housing and being of polygonal cross section;

feeder means traversing said first orifice for conveying to said drum material to be filtered by said device;

drive means connected to said body for swinging same through at least a part of an arc about said axis;

washing means including a respective pipe section extending centrally along each of said tube sections and provided with spray nozzles, said pipe sections being joined in a generally zig-zag-shaped pipe connected to a source of solvent;

first transport means attached to said housing for collecting filtrate forced from said body through said filter means; and

second transport means attached to said housing for collecting filtered material from said tube via said outlet.

4,282,102

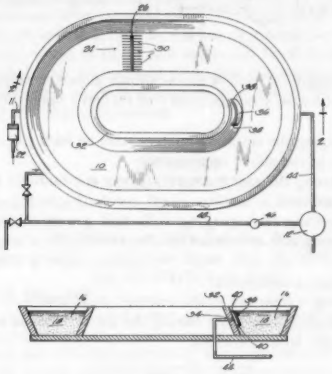
ACTIVATED SLUDGE WASTEWATER TREATMENT HAVING SUSPENDED INERT MEDIA FOR BIOTA GROWTH

Thomas C. Rooney, Waukesha, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Continuation of Ser. No. 940,923, Sep. 11, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 98,693

Int. Cl.³ C02F *3/08*

U.S. Cl. 210—616 **3 Claims**



1. A method of wastewater treatment comprising introducing wastewater containing organic material into an oxidation ditch; adding inert, solid particulate material to said wastewater; continuously circulating said wastewater and particulate material in a substantially horizontal direction within said oxidation ditch by creating a turbulent flow of said wastewater and particulate material, which turbulent flow maintains said particulate material suspended in said wastewater and enables living organisms in said wastewater to attach to and grow on said particulate material; aerating said wastewater and particulate material to promote the growth of said living organisms in said wastewater and on said particulate material; employing centrifugal forces acting on said circulating wastewater and particulate material to produce a concentration of particulate materials at the outer wall of said oxidation ditch; and withdrawing substantially only said wastewater from the interior wall of said ditch, whereby substantially all of said living organisms and particulate materials remain in said reactor.

4,282,103

METHOD FOR CONTROLLING FLOCCULANT ADDITION TO TAR SAND TAILINGS

Bryan J. Fuhr, and Joseph K. Liu, both of Edmonton, Canada, assignors to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; PanCanadian Petroleum Limited, Calgary; Esso Resources Canada Ltd., Calgary; Canada-Cities Service, Ltd., Calgary and Gulf Canada Resources Inc., Calgary, all of, Canada

Filed Nov. 20, 1979, Ser. No. 96,177

Int. Cl.³ B01D *21/01*; C02F *1/52*

U.S. Cl. 210—709 **5 Claims**

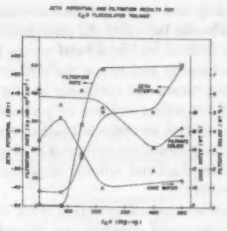
1. In the hot water extraction process, wherein a solids-laden aqueous whole tailings stream, containing coarse and fine solids, is generated as a waste product, the improvement comprising:

treating said whole tailings stream with flocculating agent to co-flocculate coarse and fine solids and produce settled aggregates thereof;

simultaneously monitoring the zeta potential of the fine solids left in suspension;

continuing the addtition of the flocculating agent until said zeta potential is about zero; and

simultaneous with the treating and monitoring, separating the constituents of the stream to produce a substantially



water-free solids phase and a substantially clarified aqueous phase.

4,282,104

ANTICARCINOGEN ADDITIVE FOR WATER SUPPLIES

August J. Pacini, 1065 Belle Meade Island Dr., Miami, Fla. 33138,

Continuation of Ser. No. 596,368, Jul. 16, 1975, abandoned. This application Feb. 22, 1977, Ser. No. 770,445

Int. Cl.³ C02F *1/76*

U.S. Cl. 210—754 **3 Claims**

1. Method of treating a water supply to sanitize the water supply, reduce carcinogen concentration in the water supply and prevent the formation of carcinogens in the water supply comprising the steps of

adding chlorine to the water supply to a concentration in excess of the amount needed to sanitize the water supply; and

adding a concentration of ascorbic acid thereto sufficient to inactivate an amount of chlorine equal to the excess of the chlorine over the amount needed to sanitize the water supply;

said concentration of ascorbic acid being sufficient to destroy existing carcinogens and prevent the formation of carcinogens while leaving a residual free chlorine concentration in the water supply sufficient to sanitize the water supply.

4,282,105

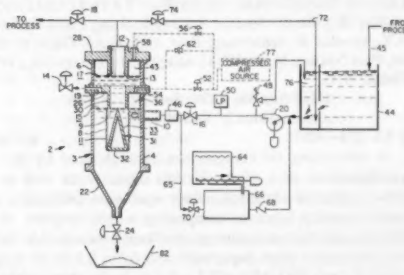
FILTER

William D. Crowe, San Francisco, Calif., assignor to J. R. Schneider Co., Inc., Corte Madera, Calif.

Filed Jan. 28, 1980, Ser. No. 116,360

Int. Cl.³ B01B *29/40*

U.S. Cl. 210—798 **33 Claims**



1. An improved filter for the removal of particulate contaminants from a contaminated incoming liquid comprising:

a vessel defining first and second chambers and including bulkhead means separating the chambers, the vessel having an inlet communicating with the first chamber and an outlet communicating with the second chamber;

means defining a fluid passage between the first and second chambers;

screen means disposed in the first chamber and fluidly interposed between the inlet and the passage, whereby incoming liquid is filtered by the screen means before entering the second chamber and hence the outlet;

first gas holding means for retaining during normal operation of the filter a first volume of pressurized gas in the first chamber and on an upstream side of the screen means;

second gas holding means for retaining during normal operation of the filter a second volume of pressurized gas in the second chamber;

vent valve means in communication with the first holding means for selectively venting gas therefrom, whereby upon the opening of the vent valve means the pressurized second gas volume rapidly forces a column of liquid between the second holding means and the upstream side of the screen means in a counterflow direction through the screen means and into the first holding means, thereby dislodging contaminants built up on the upstream side of the screen means;

the first holding means being positioned and dimensioned and the vent valve means communicating with a portion of the first holding means which is positioned so that a liquid level in the first holding means after said liquid column has entered it does not reach said portion of the first holding means in communication with the vent valve means; and

means for maintaining the first and second gas holding means substantially filled with gas irrespective of the pressure of the liquid in the vessel.

4,282,106

LOW VISCOSITY OILS

Luke A. Schaap, South Holland; John H. Udelhofen, Wheaton, and Samuel W. Harris, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 5, 1979, Ser. No. 82,068

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **7 Claims**

1. An internal combustion engine lubricating oil having a viscosity about 5W to 7½W resistant to the consumption of the volatile, easily oxidized components which comprises a major portion of a suitable base oil and an amount of a sulfurized oil sufficient to reduce oil consumption, a dispersant, an anti-corrosion agent, an anti-rust agent, a detergent, an anti-oxidant, and a viscosity index improver.

4,282,107

DIESEL CRANKCASE LUBRICANT COMPOSITION

Benjamin H. Zoleski, Beacon; Rodney L. Sung, Fishkill, both of N.Y.; Gordon R. Schierberg, Port Arthur, and Gayle P. Hebert, Port Neches, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 26, 1979, Ser. No. 78,870

Int. Cl.³ C10M *1/54*

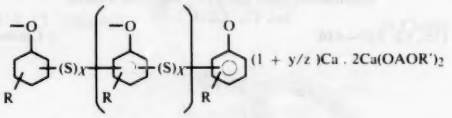
U.S. Cl. 252—42.7 **9 Claims**

1. A lubricating oil composition characterized by the absence therefrom of a silver friction modifier as well as by improved alkaline retention, silver corrosion protection and percent viscosity increase comprising a hydrocarbon oil of lubricating viscosity containing: an alkenyl succinimide detergent-dispersant, a pour depressant and from 0.1 to 90 weight percent of a non-CO_2 blown 2:1 calcium hydroxide overbased calcium sulfurized alkylphenol having an alkylphenol to calcium metal ratio of about 2 to 3 , produced by the steps of:

(a) overbasing at a temperature between about 350°and 425° F. under a pressure not exceeding 10 psig with from about 1.8 to 2.2 moles of a calcium alkoxyalkoxide of the formula:

$$Ca(O—A—OR')_2$$

where A is alkanediyl of from 1 to 6 carbons and R' is alkyl of from 1 to 25 carbons, a sulfurized calcium alkylphenolate having a calcium content between about 1 and 8.0 weight percent which has the formula:



wherein R, R' and A are as shown above; x ranges from about 1 to 4, y ranges from 0 to 1.0 and z ranges from 0 to 0.1;

(b) sparging the resulting mixture with an inert gas substantially at the above temperature;

(c) steaming the sparged mass again at substantially the said temperature;

(d) repeating said sparging with said gas at an increased stripping rate, continued for about two hours at about 350° F.;

(e) adding a diluent oil;

(f) adding a filter aid to the reaction mass, and

(g) separating a product having the above formula wherein z ranges from 1.8 to 2.2.

4,282,108

OIL-SOLUBLE SPIRO-[CYCLOALKANE-OXAZOLIDINES], THEIR PREPARATION AND USE AS ADDITIVES AND CHELATING AGENTS FOR FUNCTIONAL FLUIDS

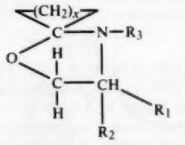
Harold E. Deen, Cranford; Esther D. Winans, Colonia; Jack Ryer, East Brunswick, and Rosemary O'Halloran, Union, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 7, 1980, Ser. No. 110,004

Int. Cl.³ C10M *1/32, 3/26*

U.S. Cl. 252—51.5 R **6 Claims**

1. A composition comprising a major amount of a mineral oil functional fluid and a minor but at least a copper-corrosion inhibiting amount of an oil-soluble spiro-(cycloalkane-oxazolidine) characterized by the formula:



wherein: x is an integer of from 4 to 11; R_1 is methylol, methyl or ethyl; R_2 is hydrogen, methyl or ethyl; and R_3 is hydrogen or methyl.

4,282,109

AQUEOUS HYPOCHLORITE SOLUTIONS

Anthony M. Citrone, Chinnor, and Stephen B. Pontin, High Wycombe, both of England, assignors to Reckitt & Colman Products Limited, England

Filed May 15, 1980, Ser. No. 149,974

Claims priority, application United Kingdom, May 30, 1979, 18721/79

Int. Cl.³ C11D *7/54*

U.S. Cl. 252—102 **26 Claims**

1. A thickened bleach composition including an aqueous solution of alkali metal hypochlorite, and a thickening amount of a surfactant blend comprising:

(a) an amine oxide of formula:

wherein R^1 is an alkyl group containing 10 to 18 carbon atoms; R^2 is a lower alkyl group containing up to 3 carbon atoms, and

(b) an alkali metal alkyl sulphate of formula: $R^3—O—SO_3M$, wherein R^3 is an alkyl group containing 8 to 12 carbon atoms and M is lithium, sodium or potassium; the weight ratio of (a) to (b) in said surfactant blend being not less than about 3:4 and said surfactant blend being present in said composition in an amount of at least 0.25% by weight of the total composition.

4,282,110

ANTIBACTERIAL SOAP

Mamoru Koike, Kashiwa, Japan, assignor to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,522
Claims priority, application Japan, Dec. 22, 1978, 53-159628
Int. Cl.³ C11D *9/14, 9/50*
U.S. Cl. 252—107 **4 Claims**

1. An antibacterial soap comprising 2,4,4'-trichloro-2'-hydroxydiphenylether in amounts of 0.05 to 5% by weight and at least one discolor-preventing agent in amounts of 0.01 to 10% by weight selected from the group consisting of an inorganic phosphorus oxyacid and a salt thereof.

4,282,111

HYDROQUINONE AS AN OXYGEN SCAVENGER IN AN AQUEOUS MEDIUM

Stanley J. Ciuba, Burnsville, Minn., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Apr. 28, 1980, Ser. No. 144,725
Int. Cl.³ C02B *1/10;* **C09K** *3/00;* **C23F** *11/06, 11/12*
U.S. Cl. 252—178 **12 Claims**

1. A method for reducing the amount of oxygen in an oxygen-containing aqueous medium of a boiler condensate steam system comprising adding to said aqueous medium as the sole oxygen scavenger an effective amount for the purpose of a hydrazine-free aqueous solution of hydroquinone.

7. A method for reducing the amount of oxygen in oxygen-containing feedwater to a boiler comprising adding to said feedwater as the sole oxygen scavenger an effective amount for the purpose of a hydrazine-free aqueous solution of hydroquinone.

4,282,112

RUTHENIUM RECOVERY PROCESS BY SOLVENT EXTRACTION

Richard Fitoussi, Versailles; Sylvie Lours, Fontenay-aux-roses, and Claude Musikas, Villebon, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 29, 1980, Ser. No. 116,588
Claims priority, application France, Feb. 8, 1979, 79 03241
Int. Cl.³ C01G *55/00*
U.S. Cl. 252—301.1 W **9 Claims**

1. A process for the recovery of the ruthenium present in an aqueous nitric solution, wherein the ruthenium is extracted in an organic solvent by contacting the nitric solution with an organic phase comprising a dialkyldithiophosphoric acid in the presence of a compound able to displace NO^+ ions of the ruthenium complexes present in the nitric solution, and separating said organic phase containing the extracted ruthenium from said nitric solution.

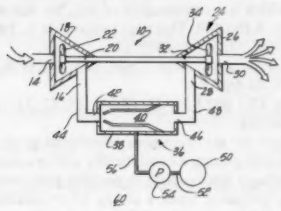
9. Application of the process according to claim 1, to the recovery of the ruthenium contained in a nitric solution obtained by dissolving irradiated fuel elements.

4,282,113

BLACK SMOKE GENERATOR

Leo R. Kiley, Whitehall, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 10, 1979, Ser. No. 83,286
Int. Cl.³ F41H *9/06*
U.S. Cl. 252—359 CG **3 Claims**



1. An engine turbocharging system comprising:

an air compressor with a compressed air outlet;

an expander with an inlet and an exhaust outlet;

a combustion means operatively connected to said compressor outlet and said expander inlet;

a burner assembly having a housing defining a combustion chamber, said housing having an air inlet and an exhaust outlet open to said burner combustion chamber, said compressor outlet being fluidly connected to the burner inlet so that a portion of the compressed air from the compressor enters the burner combustion chamber, said burner exhaust outlet being fluidly connected to said expander outlet;

means for supplying fuel to the burner combustion chamber at a rate which produces an excessively rich fuel/air mixture in the burner combustion chamber to generate black smoke; and

means for igniting the fuel/air mixture in the burner combustion chamber.

4,282,114

CATALYST FOR POLYMERIZING α-OLEFINS

Akira Ito, Yokohama; Heizo Sasaki, Tokyo; Masanori Osawa, Yokohama; Masahiro Kouno, Manazuru, and Kenji Iwata, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 28, 1980, Ser. No. 116,206
Claims priority, application Japan, Feb. 8, 1979, 54/12769; Jun. 4, 1979, 54/68860
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **4 Claims**

1. A catalyst for polymerizing α-olefins comprising

(A) a composition obtained by co-comminuting

(a) a magnesium halide,

(b) a carboxylic acid ester,

(c) a halogenated aliphatic or alicyclic hydrocarbon, and

(d) at least one ingredient selected from the group consisting of aliphatic hydrocarbons, alicyclic hydrocarbons, aromatic hydrocarbons, halogenated aromatic hydrocarbons, liquid propylene oligomers and aromatic ethers

and then heat-treating the resulting mixture at a temperature of 40° to 135° C. together with titanium tetrachloride;

(B) a trialkylaluminum compound; and

(C) a carboxylic ester or a complex thereof with an aluminum halide.

4,282,115

CATALYST FOR SELECTIVELY REDUCING NITROGEN OXIDES FROM OXYGEN-CONTAINING EXHAUST GASES

Masumi Atsukawa; Yoshihiko Nishimoto; Naruo Yokoyama, and Toshikuni Sera, all of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 66,546, Aug. 14, 1979, abandoned, which is a continuation of Ser. No. 836,961, Sep. 27, 1977, Pat. No. 4,186,109. This application Feb. 1, 1980, Ser. No. 117,765

Claims priority, application Japan, Sep. 30, 1976, 51-117424; Feb. 18, 1977, 52-16874

Int. Cl.[3] **B01J** *21/06, 23/02, 23/72, 23/74*

U.S. Cl. 252—440 **6 Claims**

1. A catalyst for the treatment of exhaust gases containing soot and dust comprising a catalytically active constituent on a carrier in having a honeycomb or parallel plate structure, said carrier being prepared from a slurry of crystallized calcium silicate prepared by mixing silicic acid and lime and treating the mixture under pressure, said calcium silicate having the structure of xonotrite and the formula: $6CaO.6SiO_2.H_2O$.

4,282,116

SUPPORTED CATALYST CONTAINING VANADIUM AND TITANIUM AND/OR ZIRCONIUM FOR THE PREPARATION OF PHTHALIC ANHYDRIDE

Peter Reuter, Bad Durkheim; Kurt Blechschmitt, Schifferstadt, and Friedrich Wirth, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,413

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914683

Int. Cl.[3] **B01J** *21/06, 23/22, 35/00*

U.S. Cl. 252—461 **2 Claims**

1. A supported catalyst containing vanadium and titanium and/or zirconium, obtained by applying a mixture of finely divided titanium dioxide and/or zirconium dioxide and a solution or suspension of a vanadium compound to an inert, nonporous, ring-shaped carrier having an external diameter of from 6 to 10 mm, a length of from 4 to 10 mm and a wall thickness of from 0.5 to 3 mm in such a way that the carrier, after drying, carries a coating from 0.05 to 1 mm thick of an active material containing from 1 to 30% by weight of vanadium pentoxide and from 70 to 99% by weight of titanium dioxide and/or zirconium dioxide, wherein the two end faces of the ring-shaped carrier are outwardly beveled at an angle such that the length of the outer cylindrical wall is at least 20% shorter than the length of the inner cylindrical wall.

4,282,117

METHOD FOR PRODUCING ELECTRICALLY CONDUCTIVE ZINC OXIDE

Makoto Muramoto; Nobuyuki Ishida, and Fujio Matsushita, all of Neyagawa, Japan, assignors to The Honjo Chemical Corporation, Japan

Filed May 30, 1979, Ser. No. 43,646

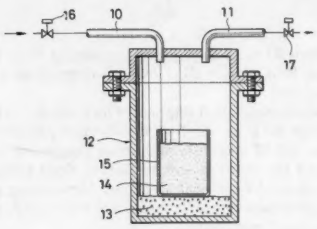
Claims priority, application Japan, Jun. 12, 1978, 53/71161; Jul. 11, 1978, 53/84812

Int. Cl.[3] **H01B** *1/06*

U.S. Cl. 252—508 **8 Claims**

1. A method for producing electrically conductive zinc oxide comprising:

calcining zinc oxide under an ambient atmosphere in a vessel at a temperature of about 800° C. to about 1100° C. in a mixture thereof with aluminum oxide or a precursor thereof convertible into the oxide under the conditions of treatment, the precursor being selected from the group consisting of aluminum nitrate, aluminum sulfate, aluminum chloride, aluminum bromide, aluminum hydroxide, aluminum formate and aluminum acetate, in an amount of from 0.5 moles to about 5 moles, based on the aluminum therein, in relation to 100 moles of zinc oxide, in the presence of solid carbon, while allowing the gases generated by the reaction of the solid carbon with the ambient atmosphere to be discharged spontaneously from the vessel as the gases are generated; and



cooling the thus calcined mixture to a temperature below about 200° C. under a non-oxidizing atmosphere.

4,282,118

ELECTROCONDUCTIVE POLYMER COMPOSITION

Mei H. Hwang, Pittsburgh, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 960,808, Nov. 15, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,029

Int. Cl.[3] **H01B** *1/06*

U.S. Cl. 252—518 **4 Claims**

1. An electroconductive polymer composition containing from 90 to 99.5% by weight of a water-soluble electroconductive cationic-quarternary ammonium polymer; sufficient amounts of a stabilizer to adjust the pH to 8.0 or more, said stabilizer selected from the group consisting of potassium hydroxide, sodium hydroxide and ammonium hydroxide; and from 0.5 to 10% by weight of the polymer composition of mono- and bis-(1H,1H,2H,2H-perfluoroalkyl)phosphate esters of the formula:

$$(C_mF_{2m+1}C_nH_{2n}O)_yPO(OM)_{3-y}$$

wherein m is an integer between 4 and 10, n is an integer between 1 and 11, y is 1 or 2 and M is a water-solubilizing cation selected from the group consisting of an alkali metal, ammonium or substituted ammonium; or ammonium bis-(N-ethyl-2-perfluoroalkylsulfonamido ethyl)phosphates, containing not more than 15% ammonium mono(N-ethyl-2-perfluoroalkylsulfonamido ethyl)phosphates, where the alkyl group is more than 95% C_8 and the salts have a fluorine content of 50.2% to 52.8% as determined on a solids basis.

4,282,119

MANUFACTURE OF CHIPBOARD HAVING HIGH STRENGTH AND REDUCED FORMALDEHYDE EMISSION, USING A MINOR AMOUNT OF PROTEIN IN COMBINATION WITH LOW FORMALDEHYDE:UREA RESINS

Arie Tinkelenberg, Limbricht; Henricus W. L. M. Vaessen, Wijnandsrade; Kwai W. Suen, Geleen, and Anton J. Van Doorn, Steenderen, all of Netherlands, assignors to Methanol Chemie Nederland V.o.F., Haren, Netherlands

Filed Dec. 18, 1979, Ser. No. 104,761

Claims priority, application Netherlands, Dec. 20, 1978, 7812336

Int. Cl.[3] **C08L** *61/24, 97/02*

U.S. Cl. 260—6 **6 Claims**

1. In the manufacture of chipboard material by hardening at elevated temperature and pressure of cellulose-containing material with an aminoplast resin on the basis of formaldehyde, urea and optionally melamine as bonding agent to form a sheet,

the improvement of using in combination an aminoplast resin which contains 0.45 to 0.65 mole of formaldehyde per mole equivalent of amino groups and to which between 2 and 20% by wt., relative to the resin, of a protein, dissoluble or dispersible in the resin solution, has been added.

4,282,120

SHEET MATERIAL FOR GENERAL COVERINGS AND METHOD OF MAKING THE SAME

Leandro Cisterni, Forli, Italy, assignor to S.U.B. Societa Utilizzazione Brevetti S.R.L., Forli, Italy

Filed Jan. 25, 1978, Ser. No. 872,053

Claims priority, application Italy, Jan. 31, 1977, 19781 A/77

The portion of the term of this patent subsequent to Sep. 5, 1995, has been disclaimed.

Int. Cl.[3] **C08L** *1/00;* **B29D** *7/14*

U.S. Cl. 260—17.4 R **9 Claims**

1. A method of producing a stratiform material comprising stirring 35–45 parts by weight of solvents, polyvinylacetate homopolymer in the form of flakes or pearls with 10–15 parts of polyvinylacetate and 2–5 parts by weight of oil, separately mixing 25–30% by weight of wood powder having a granulometry in the range of 50–150 microns and mineral fillers in an amount of 10–20% by weight, then intermixing the liquid and powdery phases to obtain a homogeneous mixture which is passed through calendering rollers, the last pair of which produces an embossing on at least one of the two surfaces, the layer being reduced to a thickness in the range of 0.2–2.0 millimeters.

4,282,121

RESILIENT STARCH GRAFT POLYMER POLYHYDRIC ALCOHOL PRODUCT

Phillip W. Goodrich, St. Paul, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Oct. 9, 1979, Ser. No. 83,128

Int. Cl.[3] **C08L** *3/02*

U.S. Cl. 260—17.4 GC **4 Claims**

1. A composition comprising the reaction product at temperatures of about 23° C. to 120° C. of a starch-hydrolyzed polyacrylonitrile graft copolymer and a sugar alcohol having the general formula $HOCH_2(CHOH)_nCH_2OH$ where n is 2–5 and wherein, based on the total weight of starch graft polymer and sugar alcohol, said starch graft polymer is present in an amount of about 5–60% by weight and said sugar alcohol is present in an amount of about 95–40% by weight.

4,282,122

LIQUID MODIFIED EPOXY RESINS

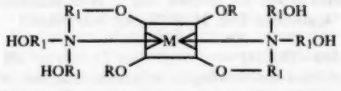
Leonard E. Edelman, and Robert H. Runk, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 180,873, Sep. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 845,405, Jul. 28, 1969, abandoned. This application Sep. 17, 1975, Ser. No. 614,717

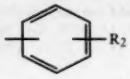
Int. Cl.[3] **C09D** *3/30, 3/58*

U.S. Cl. 260—18 EP **22 Claims**

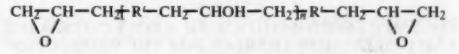
1. A method of making a liquid modified epoxy resin comprising reacting under non-hydrolyzing conditions to the clear pill stage about 20 to about 80% by weight of at least one liquid diglycidyl ether of a diphenol with about 20 to about 80% by weight of at least one non-hydroxylated drying oil in the presence of about 0.1 to about 1.5% by weight (based on the diglycidyl ether and the drying oil) of at least one catalyst having the formula



where M is titanium, aluminum, or silicon, R_1 is ethylene, propylene, or isopropylene, R is aliphatic or cycloaliphatic having 1 to 6 carbon atoms or

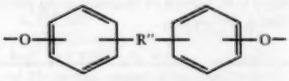


where R_2 is hydrogen or alkyl to C_4, and said diglycidyl ether of a diphenol has the formula

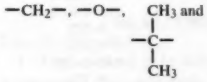


where R′ is a diphenol radical selected from the group consisting of

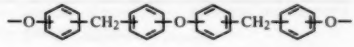
and



where R″ is selected from the group consisting of



and



n is an average of less than 1.

4,282,123

ELASTOMERIC URETHANE COATING

Joseph E. Ilaria, Cranford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 64,293, Aug. 6, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,016

Int. Cl.[3] **C08G** *18/58*

U.S. Cl. 260—18 PT **4 Claims**

1. A two-component coating composition wherein:

(1) Component A comprises an adduct of a diglycidyl ether of bisphenol A, having an epoxy equivalent weight between about 170 and about 2,000, polyfunctional acid, and a mixture of aliphatic and aromatic amine, pigment, magnesium silicate talc extender, and a solvent mixture of alkoxyethyl acetate, alkyl ketone, ethyl acetate, and aromatic hydrocarbon with a solids content of 60–70 weight percent; and

(2) Component B comprises a urethane prepolymer based on flexible polyhydroxy functional oligomers and toluene diisocyanate or isophorone diisocyanate;

(3) said Component A and Component B being mixed at the time of application.

4,282,124

DIETHYL FUMARATE REACTIVE DILUENT FOR AIR DRY COATINGS

Joseph E. McLaughlin, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 14, 1979, Ser. No. 94,284
Int. Cl.³ B32B *15/08, 27/40;* **C09D** *3/64, 3/80*
U.S. Cl. 260—22 A **16 Claims**

1. A mixture of a drying oil coating resin and diethyl fumarate, the resin:diethyl fumarate weight ratio being in the range 50:1 to 50:50.

4,282,125

POLYMER COMPOSITION WITH A POLYESTER BASIS AND UTILIZATION THEREOF FOR THE PRODUCTION OF TRANSPARENT FLEXIBLE LAMINATES WITH INERT AND/OR FIBROUS FILLING MATERIALS

Romeo Ferretti, Rome, Italy, assignor to PRO SAC S.p.A., Regio Calabria, Italy

Filed Feb. 8, 1980, Ser. No. 119,915
Claims priority, application Italy, Feb. 15, 1979, 48016 A/79
Int. Cl.³ C08L *67/08*
U.S. Cl. 260—22 CB **4 Claims**

1. A polymer composition for manufacturing flexible laminates with a basis of thermosetting polyesters, characterized in that it comprises:

Orthophthalic polyester resin with a low unsaturation	46–38%
Polyester adipic resin	32.73–36.20%
Soy oil	1–2%
Glycerol	0.37–0.80%
Trichloroethylphosphate	6.60–8.40%
Paraffin	6–5%
Styrene	1–2%
Cobalt salt	0.40–0.60%
Methyl-ethylketone peroxide	6–7%

4,282,126

POLYISOBUTYLENE RUBBER ANTIFOULING PAINT

Stephen D. Rodgers, Bowie, and Bernard R. Appleman, Gaithersburg, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,192
Int. Cl.³ C08L *93/04*
U.S. Cl. 260—27 R **4 Claims**

1. A camouflage antifouling composition essentially comprising, by weight, non-volatile ingredients including from about 2% to about 23% polyisobutylene polymer having a molecular weight from about 81,000 to about 99,000; from about 23% to about 29% rosin; from about 45% to about 57% tributyltin fluoride and from about 9% to about 11% pigment; the remainder of the composition being principally a volatile solvent.

4,282,127

POLYMER-CONTAINING BITUMINOUS COMPOSITION AND COMPOSITE SEALING SHEET INCLUDING THE SAME

Henri F. M. Desgouilles, Residence La Closeraie, 4 Rue des Fontaines, 60500 Chantilly, France

Filed Sep. 11, 1979, Ser. No. 74,332
Claims priority, application France, Sep. 13, 1978, 78 26336
Int. Cl.³ C08L *91/00*
U.S. Cl. 260—28.5 AS **14 Claims**

1. Bitumen-, polyolefin- and elastomer-based sealant composition consisting essentially of a mixture of (a) 52–78 wt. % of bitumen, (b) 20–40 wt. % of a polyolefin selected from a polypropylene, a polybutylene, an ethylene-propylene copolymer and a propylene-ethylene-butylene copolymer and having a viscosity in the order of 10,000 to 30,000 centipoises at 190° C. and a TBA softening point between about 100° C. and about 180° C., and (c) 2–8 wt. % of a styrene-butadiene copolymer elastomer having a molecular weight of about 100,000 to about 300,000, said composition having a TBA softening point of at least 140° C., a tensile elongation at break of about 800% to about 2000%, and a flexibility in the cold such that cracks do not form at temperatures as low as −40° C.

4,282,128

THERMOSETTING BINDERS FOR CATHODIC DEPOSITION IN ELECTRODEPOSITION PAINTS

Georgios Pampouchidis, and Helmut Hönig, both of Graz, Austria, assignors to Vianova Kunstharz, A.G., Werndorf, Austria

Filed Dec. 21, 1979, Ser. No. 106,165
Claims priority, application Austria, Dec. 27, 1978, 9280/78
Int. Cl.³ C08L *75/02, 63/00*
U.S. Cl. 260—29.2 TN **13 Claims**

1. Process for preparing thermosetting binders for cathodically depositable electrodeposition paints characterized in that (A) 1 mole of an isocyanate having the formula OCN—R—$(NCO)_n$, wherein R is an aromatic, aliphatic or cycloaliphatic hydrocarbon radical, and n is 1 or 2, is reacted at from 0°–50° C., with

(a) 0.1–0.5, if n is 1, or 0.1–1.0, if n is 2, moles of a tertiary dialkylalkanol amine, and subsequently with

(b) 0.5–0.9, if n is 1, or 1.0–1.9, if n is 2, moles of a monohydroxy compound with from 1–3 $CH_2=CR_1$ groups, wherein $R_1=H$ or CH_3, and selected from the groups consisting of monohydroxy esters of acrylic or methacrylic acid and an alkanol having from 1 to 4 hydroxy groups and monohydroxy ethers of allyl alcohol and an alkanol having from 3 to 4 hydroxy groups, and

(B) reaction intermediate (A) carrying an average of 1 free isocyanate group is reacted at from 10°–100° C., with the hydroxy groups of a 1,2-epoxy resin/amine adduct until an isocyanate value of 0 is obtained; the quantities of reactants selected to provide a binder which, in 1000 molecular weight units, carries at least 0.5 chain end or side chain double bonds and at least 0.15 basic nitrogen atoms.

4,282,129

PROCESS FOR THE PRODUCTION OF POLYOL-ALKALI METAL SILICATE EMULSION

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 146,474, May 5, 1980. This application Sep. 29, 1980, Ser. No. 191,375
Int. Cl.³ C08J *3/06, 3/08;* **C09K** *3/00*
U.S. Cl. 260—29.2 E **10 Claims**

1. The process for the production of a stable polyol-alkali metal silicate emulsion by mixing the following components:

(a) Aqueous alkali metal silicate solution, 1 to 50 parts by weight;

(b) Polyol, 25 parts by weight;

(c) Organic acid, 1% to 5% by weight, percentage based on weight of alkali metal silicate solution.

4,282,130

PROCESS FOR CONTROLLED GELATION OF POLYMERIC SOLUTION (C-669)

Robert D. Lundberg, Bridgewater, N.J.; Dennis E. O'Brien, Houston, Tex.; Henry S. Makowski, Scotch Plains, and Robert R. Klein, Berkeley Heights, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 930,044, Aug. 1, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,027
Int. Cl.³ C08F *8/36*
U.S. Cl. 260—29.6 SQ **35 Claims**

1. A process for forming a polymeric solution or water insoluble gel having a viscosity of at least about 50,000 cps which includes the steps of:

(a) forming a solvent system of an organic liquid and a polar cosolvent, said polar cosolvent being less than about 15 wt. % of said solvent system, a viscosity of said solvent system being less than about 1,000 cps;

(b) dissolving a water insoluble neutralized sulfonated polymer in said solvent system to form a solution, a concentration of said neutralized sulfonated polymer in said solution being about 0.1 to about 20 wt. %, a viscosity of said solution being less than about 20,000 cps; and

(c) adding about 5 to about 500 volume % water to said solution, said water being immiscible with said solution, with said polar cosolvent transferring from said solution to said water causing the viscosity of said solution or suspension to increase from less than 20,000 cps to greater than 50,000 cps.

4,282,131
CAR UNDERCOATING COMPOSITION

Edward G. Trousil, Arvada, Colo., assignor to Chapman Enterprises Corp., Waterloo, Iowa

Filed Feb. 8, 1980, Ser. No. 119,952
Int. Cl.³ C08L *9.08*
U.S. Cl. 260—29.7 R **8 Claims**

1. An aqueous emulsion butadiene styrene latex composition consisting essentially of from about 40% to about 65% weight butadiene styrene, from about 5% to about 20% by weight of mica platelets as filler and flattening agent which effectively prevents vapor transmission and also as an anti-gelling agent for said composition and a sufficient amount of ammonium hydroxide to enhance anti-foaming properties of said composition and to provide a pH within the range of about 7.5 to 10.0 from about 0.02% to about 0.2% by weight of a bacteriostatic agent, from about 0.1% to about 1% by weight of a wetting agent, from about 0.05% to about 1% by weight of a defoaming agent, from about 0.5% to about 2% by weight of a viscosity control agent, and from about 1% to about 5% by weight of pigment, the balance of said composition comprising water.

4,282,132
LUBRICATING OIL ADDITIVES

Rainer Benda, Rossdorf; Helmuth Knoell, Lautertal; Peter Neudoerfl, and Horst Pennewiss, both of Darmstadt-Neu-Kranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 63,682
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1978, 2835192
Int. Cl.³ C10M *1/32, 3/26, 5/20, 7/30*
U.S. Cl. 260—30.2 **14 Claims**

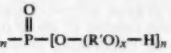
1. A method for making a lubricating oil additive which comprises a first step of free-radically graft copolymerizing an alkyl ester of acrylic acid or of methacrylic acid, alone or in combination with styrene in a weight ratio of styrene to esters of 1:15 to 1:9, onto a backbone copolymer which is a hydrogenated block copolymer of styrene and a conjugated diene having 4 to 6 carbon atoms and a residual content of olefinic double bonds of less than 15 percent, in a medium suitable for use as a lubricant, to form a first graft copolymer, and a second step of free-radically graft copolymerizing at least one N-heterocyclic monomer selected from the group consisting of N-vinyl-pyrrolidone-2 and N-vinyl-imidazole, alone or in combination with a hydrophobizing vinyl ester in a weight ratio of ester to said N-heterocyclic monomer of 1:0.1 to 1:3, onto said first graft copolymer, in a medium suitable for use as a lubricant, to form a second graft copolymer comprising 5 to 50 percent by weight of said hydrogenated block copolymer, from 49.5 to 85 percent by weight of monomers graft copolymerized in said first step, and from 0.5 to 10 percent by weight of monomers graft copolymerized in said second step.

4,282,133
FILLED UNSATURATED POLYESTER RESIN COMPOSITIONS

Ralph B. Fearing, Bardonia, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 26, 1979, Ser. No. 107,283
Int. Cl.³ C08K *5/36*
U.S. Cl. 260—30.6 R **7 Claims**

1. A filled unsaturated polyester resin composition which comprises an unsaturated polyester resin, filler, and an effective amount of a substantially neutral lower alkoxylated alkyl acid phosphate composition for reduction of the viscosity of the composition wherein said alkyl acid phosphate contains a major amount of at least one compound of the formula



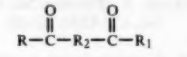
where x is an integer of from 1 to 5, m and n are either 1 or 2, with the sum of m and n being 3, R is a C_1–C_{20} alkyl group and R′ is a C_2–C_5 alkylene group.

4,282,134
PLASTICIZED POLYCARBONATE COMPOSITION

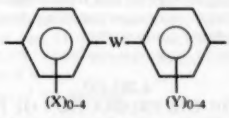
Victor Mark, Evansville, Ind., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 957,353, Nov. 3, 1978, abandoned, which is a division of Ser. No. 781,054, Mar. 24, 1977, Pat. No. 4,184,994. This application May 9, 1979, Ser. No. 37,922
Int. Cl.³ C08K *5/36, 5/06, 5/07*
U.S. Cl. 260—30.8 R **6 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an organic plasticizer represented by the following general formula:



wherein R and R_1 are independently selected from the group consisting of C_1 to C_{30} alkyl, aryl of 6 to 14 carbon atoms and substituted aryl wherein the substituents on said substituted aryl are C_1 to C_{30} alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms and arylthio of 6 to 14 carbon atoms; R_2 is C_1 to C_{30} alkylene, arylene of 6 to 14 carbon atoms, alkarylene of 7 to 30 carbon atoms, aralkylene of 7 to 30 carbon atoms and



wherein W is selected from the group consisting of:

(a) —O—;

(b) —S—;

(c)

wherein X and Y are independently selected from the group consisting of halogen and C_1 to C_{12} alkyl, said

organic plasticizer being nonvolatile at an elevated temperature for extrusion or molding.

4,282,135

AMINOPLAST DISPERSIONS AND POLYURETHANES PREPARED THEREFROM

Kuno Wagner, Leverkusen-Steinbuechel, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 464,099, Apr. 25, 1974, Pat. No. 4,225,481. This application Feb. 25, 1980, Ser. No. 124,161

Claims priority, application Fed. Rep. of Germany, May 12, 1973, 2324134

Int. Cl.³ C08K *5/05*

U.S. Cl. 260—33.4 UR **5 Claims**

1. A process for making a polyurethane resin which comprises reacting an organic polyisocyanate with a stable dispersion having a solids content of about 0.5% to about 80% by weight obtained by condensing ammonia, hydrazine or an organic compound having a molecular weight of from about 50 to about 400 and which contains at least two groups selected from the group consisting of $—NH_2$ and —NH— with benzoquinone or a compound of the formula R—Co—R′ in which R and R′ stand for the same or different radicals selected from the group consisting of hydrogen, C_1–C_4 alkyl groups which may carry chlorine substituents, C_2–C_4-alkenyl groups, C_6–C_{10} aryl groups, C_7–C_{10} aralkyl groups, C_5–C_{10} cycloalkyl groups and semi-acetals obtained by reacting said carbonyl compounds with monohydric or dihydric aliphatic alcohols having one to ten carbon atoms in an organic polyhydroxyl compound having a molecular weight of from about 250 to about 14,000 as the reaction medium.

4,282,136

FLAME RETARDANT EPOXY MOLDING COMPOUND METHOD AND ENCAPSULATED DEVICE

Earl R. Hunt, 2408 Cherry Hill Dr., Toledo, Ohio 43615; Robert K. Rosler, 4751 Santa Maria Dr., Toledo, Ohio 43614, and James O. Peterson, 6752 Gettysburg Dr., Sylvania, Ohio 43615

Filed Apr. 9, 1979, Ser. No. 28,155

Int. Cl.³ C08L *63/00*

U.S. Cl. 260—38 **24 Claims**

1. In a method of encapsulating a semiconductor device wherein a thermosetting epoxy molding compound is cured in a liquid state in a mold surrounding a semiconductor device, said epoxy molding compound comprising a mixture of an epoxy, a hardener selected from phenol-derived and substituted phenol-derived resin, carboxylic acid anhydride and amine hardeners, a catalyst, a mold release agent, optionally a filler, optionally a colorant, optionally a coupling agent and a flame retardant system which may include one or more of the other ingredient; the improvement wherein the flame retardant system comprises about one percent antimony pentoxide by weight of molding compound and from about 1.3 to about 1.6 percent of a reactive bromine-containing organic compound by weight of molding compound.

4,282,137

PROCESS FOR THE PRODUCTION OF POLYESTER FIBERS AND FILAMENTS WHICH CAN BE DYED IN THE ABSENCE OF CARRIERS AND THE FILAMENTS AND FIBERS PRODUCED THEREBY

Armin Köhler, Dormagen; Peter Hoffmann, Leverkusen; Herbert Pelousek, and Eduard Specht, both of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 11, 1978, Ser. No. 904,816

Claims priority, application Fed. Rep. of Germany, May 14, 1977, 2721984

Int. Cl.³ C08K *67/00;* **D01F** *1/04*

U.S. Cl. 260—40 P **6 Claims**

1. A process for the production of polyester filaments and fibers which can be dyed in the absence of a carrier which comprises introducing into the polymer to be spun from 0.1 to 4.0% by weight based on the mixture as a whole of a silicate charged with an inert gas, melt spinning the mixture obtained in known manner and further processing into filaments or fibers, wherein said silicate has a three dimensional network and contains channels or vacuoles which can be charged with inert gas.

4,282,138

ESTERS OF TETRACARBOXYLIC ACIDS AND RESINS DERIVED THEREFROM

Erich Kuehn, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 748,170, Dec. 7, 1976, Pat. No. 4,139,577. This application Oct. 26, 1978, Ser. No. 955,137

Int. Cl.³ C08K *7/02, 7/04, 7/06;* **C08L** *67/06*

U.S. Cl. 260—40 R **12 Claims**

1. A polymerizable composition comprising a carbocyclic tetracarboxylic ester monomer useful for imparting flame retardance to resins made therefrom and having a general formula:

$$(RO_2C')_2{=}X{=}(C''O_2R')_2$$

wherein =X= is selected from a tetravalent 5- or 6-membered single- ring system wherein the C′ carbons are attached to a pair of vicinal carbons in said ring system and the C″ carbons are attached to another pair of vicinal carbons in said ring system wherein one each of R and R′ is a halogenated ethylenically unsaturated organic radical containing at least two atoms selected from the group consisting of chlorine and bromine and the other of each R an R′ is selected from the group consisting of $—H,CH_2CH(OH)CH_2O_2CCR''{=}CH_2$, and $CH[CH_2(OH)]$-$CH_2O_2CCR''{=}CH_2$, wherein R″ is —H or $—CH_3$; one or more ethylenically unsaturated monomers and an ethylenically unsaturated resin selected from the group consisting of polyesters, polyurethanes, polyepoxy condensation products, polyethers, epoxidized polybutadienes and polyisocyanurates.

4,282,139

FIBER-REINFORCED RESIN COMPOSITION CONTAINING POLYPHENYLENE ETHER RESIN

Akitoshi Sugio, Ohmiya; Masanobu Masu, Tokyo, and Masatugu Matunaga, Matsudo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed Sep. 19, 1979, Ser. No. 76,950

Claims priority, application Japan, Sep. 25, 1978, 53/117723

Int. Cl.³ C08K *7/12;* **C08L** *11/04*

U.S. Cl. 260—42.17 **3 Claims**

1. A fiber-reinforced resin composition having improved rigidity and dimensional stability, said composition consisting essentially of (a) a resin component which contains at least 30% by weight of a polyphenylene ether resin and, the balance being a styrene resin and (b) chrysotile asbestos fibers which are used in the form of pellets and in the amount of 10 to 100 parts by weight per 100 parts by weight of said resin component.

4,282,140

ACRYLIC CEMENT APPLICABLE IN BONE SURGERY AND IN STOMATOLOGY

Gilles Bousquet, Saint Etienne; Jean-Bernard Egraz, Ecully; Andre Rambert, Lyons, and Georges Ravet, Saint Genis les Ollieres, all of France, assignors to Societe d'Exploitation des Procedes Coatex, Caluire, France

Filed Feb. 22, 1979, Ser. No. 13,891

Claims priority, application France, Feb. 22, 1978, 78 06377

Int. Cl.³ C08F *8/00;* **C08L** *33/06;* **C08F** *265/04*

U.S. Cl. 260—42.52 **9 Claims**

1. The method of preparing an acrylic homopolymer and/or

copolymer base self-polymerizable sealing cement, applicable for prosthetic implants, the purpose of which is the safety of the patient due to the absence of monomer exudation and due to a polymerization temperature which is always lower than the mobilization temperature of human fat, said cement being prepared by mixing a liquid phase and a solid phase in a weight ratio range of 1 to 0.5–2.5, in which the liquid phase is a collodion formed of an acrylic homopolymer and/or copolymer selected from the group consisting of polyalkylacrylate, polyalkylmethacrylate and copolymers consisting of alkylacrylates and/or alkylmethacrylates in which the alkyl group is methyl, ethyl, propyl or butyl in at least one acrylic monomer selected from the group consisting of alkylacrylate and alkylmethacrylate in which the alkyl group is methyl, ethyl, propyl or butyl consisting of at least 65% by weight of acrylic monomer and between 15% and 35% by weight of acrylic homopolymer and/or copolymer, and in which the solid phase is composed of an acrylic homopolymer and/or copolymer selected from the group consisting of polyalkylacrylate, polyalkylmethacrylate and copolymers consisting of alkylacrylates and/or alkylmethacrylates.

4,282,141

ORTHO-SUBSTITUTED PHENYL PHOSPHITE ADDITIVE COMPOSITION

Motonobu Minagawa, Koshigaya; Yutaka Nakahara, Iwatsuki, and Kazumi Kitsukawa, Misato, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,456

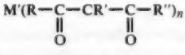
Claims priority, application Japan, Jul. 13, 1978, 53/85902

Int. Cl.³ C08K *5/07, 5/52*

U.S. Cl. 260—45.7 R **18 Claims**

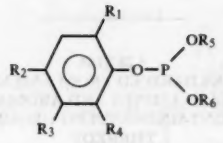
1. In an additive composition for improving the color stability upon heating at 175° C. of a vinyl chloride polymer composition stabilized with environmentally acceptable stabilizers only.

said stabilizers comprising at least one salt of a non-nitrogenous mono-carboxylic acid having 6 to 24 carbon atoms or a phenol having 6 to 36 carbon atoms with at least one of the metals lithium, sodium, potassium, zinc, barium, calcium, magnesium, and strontium, and said additive composition comprising a 1,3-diketone represented by the formula



in which R is a hydrocarbon group, a halohydrocarbon group, an alkoxyhydrocarbon group, or an alkylenedioxyhydrocarbon group having 1 to 18 carbon atoms; R′ is a hydrogen atom, an acyl group

where R‴ is alkyl or a hydrocarbon group having 1 to 18 carbon atoms; R″ is a hydrogen atom or a hydrocarbon group, a halohydrocarbon group, an alkoxyhydrocarbon group, or an alkylenedioxyhydrocarbon group, having 1 to 18 carbon atoms; M′ is hydrogen or a metal selected from the group consisting of lithium, sodium, potassium, magnesium, calcium, strontium, barium, and zinc; and n is an integer from 1 to 3 depending on the valence of M′; and an organic phosphite, the improvement in which the organic phosphite has the formula:



in which R_1 is a t-butyl, t-amyl, phenyl or cycloalkyl group having 5 to 8 carbon atoms; each of R_2 and R_3 independently is a hydrogen atom, a phenyl group, an alkyl group having 1 to 5 carbon atoms, or a cycloalkyl group having 5 to 8 carbon atoms; R_4 is a hydrogen atom or a methyl group, and each of R_5 and R_6 independently is a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, a cycloalkyl group having 5 to 20 carbon atoms, an aryl group having 6 to 12 carbon atoms, an aralkyl group having 7 to 12 carbon atoms, an alkaryl group having 7 to 18 carbon atoms, or an ether-substituted group having 3 to about 80 carbon atoms and 1 to about 40 ether oxygen atoms.

4,282,142

FLAME-RETARDED POLYOLEFIN POLYMERIC COMPOSITIONS CONTAINING 3,9-BROMOPHENOXY-2,3,8,10-TETRAOXA-3,9-DIPHOSPHASPIRO (5.5)UNDECANE-3,9-DIOXIDES

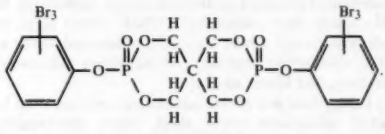
James A. Albright, Hampton, N.J., and Chester J. Kmiec, Williamsville, N.Y., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 33,601, Apr. 27, 1979, Pat. No. 4,226,813, which is a continuation-in-part of Ser. No. 685,754, May 13, 1976, abandoned. This application Mar. 14, 1980, Ser. No. 130,312

Int. Cl.³ C07F *9/15;* **C08K** *5/52*

U.S. Cl. 260—45.7 P **6 Claims**

1. A flame retarded polyolefin polymer containing from about 1 to about 40 percent (by combined weight of polymer and flame retardant) of the compound of the formula



4,282,143

OCTAPEPTIDES LOWERING GROWTH HORMONE

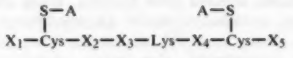
Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jun. 13, 1980, Ser. No. 159,327

Int. Cl.³ C07C *103/52;* **C08L** *37/00*

U.S. Cl. 260—112.5 S **3 Claims**

1. A compound of the formula:



in which

X_1 is Phe, D-Phe or $C_6H_5CH_2CH_2CO$—;

X_2 is Phe, Tyr, Trp, Met or Leu;

X_3 is Trp or D-Trp;

X_4 is Thr, Val, α-Abu or Phe; and

X_5 is Phe, D-Phe or —$NHCH_2CH_2C_6H_5$

and the A groups are hydrogen or a direct bond between the two sulfur atoms;

or a pharmaceutically acceptable salt or amide thereof.

4,282,144

AZO DYES DERIVED FROM 5-MEMBERED HETEROCYCLIC AMINES AND AROMATIC AMINE COUPLERS CONTAINING SULFO GROUPS, OR SALTS THEREOF

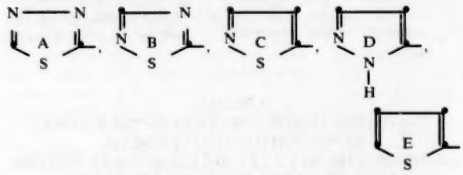
Max A. Weaver; Clarence A. Coates, Jr., and Jean C. Fleischer, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,446

Int. Cl.³ C09B *29/22, 31/14, 31/28, 62/08*

U.S. Cl. 260—152 **12 Claims**

1. A compound of the formulae D—N=N—Coupler, wherein D is selected from the heterocyclic amines of the formula



ring A may bear a substituent selected from lower alkyl, substituted lower alkyl, lower alkoxy, halogen, lower alkylsulfonyl, SO_2O aryl, SO_2NH_2, SO_2NH—lower alkyl, SO_2N—(dilower alkyl), arylsulfonyl, substituted SO_2N-H—lower alkyl, acylamido, aryl, arylthio, alkenylthio, cyclohexylthio, thiocyano, cyclohexylsulfonyl, lower alkylthio, substituted lower alkylthio and cyclohexyl;

ring B may bear a substituent selected from lower alkyl, substituted lower alkyl, aryl, lower alkylthio, cyclohexylthio, substituted lower alkylthio and lower alkylsulfonyl;

ring C may bear one or two substituents selected from alkyl, substituted lower alkyl, halogen, cyano, carbamoyl, CONH—lower alkyl, substituted CONH—lower alkyl, lower alkoxycarbonyl, lower alkylthio, substituted lower alkylthio, alkenylthio, arylthio, cyclohexylthio, S-heterocycle, aryloxy, and lower alkoxy;

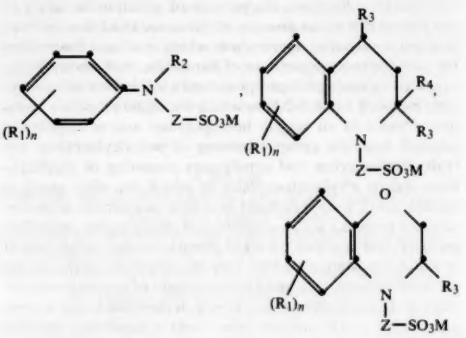
ring D may bear one or two substituents selected from lower alkyl, substituted lower alkyl, lower alkoxycarbonyl, lower alkylthio, aryl, cyano, carbamoyl, lower alkyl carbamoyl, lower alkylcarbonyl, substituted lower alkyl carbamoyl, and lower alkyl sulfonyl; and

ring E may be substituted with one to three substituents selected from lower alkyl, substituted lower alkyl, cyano, lower alkoxycarbonyl, acyl, aroyl, lower alkylsulfonyl, arylsulfonyl, carbamoyl, lower alkyl carbamoyl, substituted lower alkyl carbamoyl, aryl, halogen, sulfamoyl, lower alkyl carbamoyl, substituted lower alkyl, sulfamoyl and formyl;

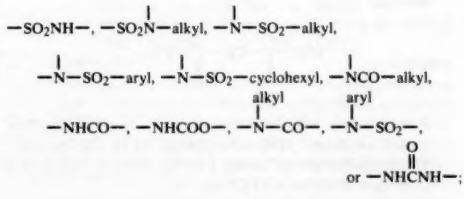
and wherein the various alkyl groups may bear one to three substituents selected from hydroxy, lower alkoxy, aryl, aryloxy, cyclohexyl, lower alkylcyclohexyl, acyloxy, lower alkoxy carbonyl, acylamido, lower alkylsulfonamido, succinimido, glutarimido, phthalimido, 2-pyrrolidono, cyano, carbamoyl, lower alkoxy-alkoxy, lower alkylthio, halogen, arylthio, lower alkylsulfonyl and arylsulfonyl;

and wherein the various aryl groups may be substituted with one to three substituents selected from lower alkyl, lower alkoxy, halogen, lower alkoxy carbonyl, lower alkyl sulfonyl, and lower alkylthio; and

the Coupler is selected from those of the formulae



wherein R_1 is selected from hydrogen, lower alkyl, halogen, lower alkoxy, aryloxy, and —NHCO—R_5 or —NH-SO_2—R_5 wherein R_5 is selected from lower alkyl which may be substituted with hydroxy, lower alkoxy, cyano, aryloxy, aryl, halogen, cycloalkyl, lower alkyl carbonyloxy, or carbamoyl; hydrogen; aryl; alkoxy; alkylamine; 2-furyl; R_2 is selected from hydrogen, aryl, cycloalkyl, and lower alkyl which may be substitued —SO_3M with alkoxy, alkoxyalkoxy, hydrogen, aryloxy, aryl, cycloalkyl, lower alkylcycloalkyl, furyl, $NHCOR_5$, $NHSO_2R_5$, aryloxy, carbamoyl, lower alkyl carbamoyl, lower alkyl substituted carbamoyl, cyano, alkanoyloxy, halogen, alkoxycarbonyl, succinimido, glutarimido, phthalimido, 2-pyrrolidono, sulfamoyl, lower alkyl substituted sulfamoyl, lower alkylsulfonamide, $NHSO_2$—aryl, NHCOO—alkyl, NHCONH—alkyl, formamido, alkylsulfonyl, arylsulfonyl, alkylthio, or arylthio; R_2 may in conjunction with R_1 form a 1,2,3,4-tetrahydroquinoline or benzomorpholine derivative; n is 0, 1 or 2; M is Na^+, K^+, NH_4^+, or H^+; R_3 and R_4 are each selected from hydrogen or lower alkyl; Z is selected from straight or branched chain lower alkylene, lower alkylene substituted with aryl, aryloxy, alkoxy, halogen, aryloxy or SO_3M, $--CH_2(CH_2)_mX—CH_2(CH_2)_p$, where m is 1, 2, or 3, p is 0, 1, 2 or 3, and X is O, S, SO_2,



and the various aryl groups may be substituted with lower alkyl, lower alkoxy, or halogen.

4,282,145

PROCESS FOR THE PREPARATION OF AZETIDINES

Jan Verwey, Leiden, and Hong S. Tan, Bleiswijk, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

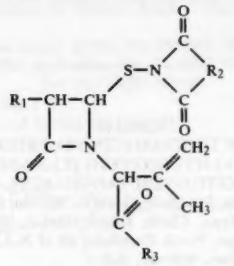
Division of Ser. No. 440,725, Feb. 8, 1974, Pat. No. 3,966,738. This application Oct. 21, 1975, Ser. No. 624,332

Claims priority, application United Kingdom, Feb. 9, 1973, 06576/73

Int. Cl.³ C07D *401/12, 403/12*

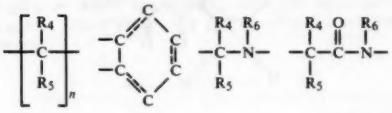
U.S. Cl. 260—239 A **10 Claims**

1. A process of preparing azetidines of the formula



I

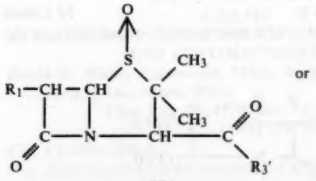
wherein R_1 is a conventional penicillin- or cephalosporinacylamido group, R_2 represents one of the groups of the following formulae:



IIA IIB IIC IID

wherein R_4, R_5 and R_6 are individually selected from the group consisting of hydrogen, lower alkyl and lower alkenyl, n is 2 or 3 and—in case formula IIB represents a phenylene group—this group may carry one to four further substituents selected from the group consisting of halogen, lower alkyl, lower alkenyl and phenyl, R_3 is an amino group of the formula

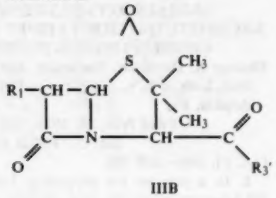
wherein R_7 is hydrogen or lower alkyl and R_8 is lower alkyl. or R_3 is a N,N'-disubstituted hydrazino group wherein the substituents are lower alkyl groups, or R_3 is —OR_9 wherein R_9 is hydrogen, lower alkyl or lower alkyl substituted by 1 to 3 halogen atoms or by 1 or 2 phenyl groups, wherein the phenyl groups may be substituted by a methoxy or a nitro group, or R_9 represents the phenacyl group or a salt-forming cation selected from the group consisting of alkali metal and alkaline earth metal ions, and corresponding azetidines of formula I wherein the double bond in the propenyl side chain has been shifted from the 2-to the 1-position which comprises the step of reacting a penicillanic sulfoxide of the formulae



or

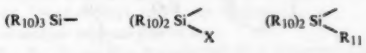
IIIA

-continued



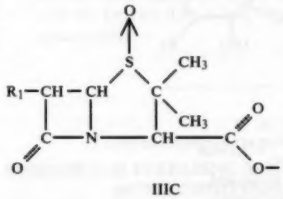
IIIB

wherein R_1 is as defined above and R_3' has the same significance as defined for symbol R_3 except that when R_3' represents —OR_9, R_9 does not represent a salt-forming cation, but R_9 also represents a silyl group of one of the following formulae:



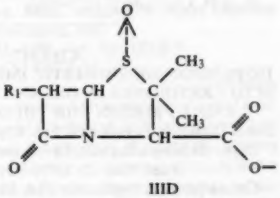
IVA IVB IVC

wherein the symbols R_{10} are the same or different and each represents a lower alkyl or alkoxy group or lower alkyl or lower alkoxy substituted by a halogen atom, or a phenyl group, X is a halogen atom and R_{11} is a penicillanic sulfoxide acyl group of the formulae:



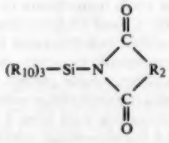
or

IIIC



IIID

wherein R_1 is as defined above with a silicon-containing compound of the formula



V

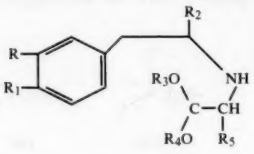
wherein R_2 and R_{10} are as hereinbefore defined, under anhydrous conditions, in an inert organic solvent at temperature between 50° and 180° C.

4,282,146
PREPARATION OF 1,2,4,5-TETRAHYDRO-7-ALKOXY-(AND 7,8-DIALKOXY)-3H,3-BENZAZEPINES AND 3-SUBSTITUTED DERIVATIVES THEREOF FROM THE CORRESPONDING PHENETHYLAMINES

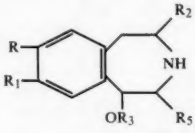
Thomas A. Davidson, Rochester, and Ronald C. Griffith, Pittsford, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 20, 1978, Ser. No. 962,223
Int. Cl.³ C07D *223/16*
U.S. Cl. 260—239 BB **10 Claims**

1. In a process for preparing 1-alkoxy-1,2,4,5-tetrahydro-3H,3-benzazepines by ring closure of N-(2,2-dialkoxyethyl)-phenethylamines with BF_3, the improvement which comprises the step of reacting a N-(2,2-dialkoxyethyl)phenethylamine having the formula


(I)

with an excess of BF_3 complex selected from BF_3 etherate or BF_3 ethanolate, in an inert solvent at elevated temperatures, to form


(II)

wherein:
R is C_1–C_4 alkoxy;
R_1 is H or C_1–C_4 alkoxy; or
R and R_1 taken together are methylenedioxy;
R_2 is H or C_1–C_4 alkyl;
R_3 and R_4 are C_1–C_4 alkyl; and
R_5 is H, C_1–C_4 alkyl or phenyl.

4,282,147
DISPERSION OF AROMATIC ISOCYANATOSULFONIC ACID URETDIONES IN ORGANIC POLYISOCYANATES AND A PROCESS FOR THEIR PREPARATION

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,414
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851341
Int. Cl.³ C07D *229/00*; C08G *18/78*
U.S. Cl. 260—239 A **9 Claims**

1. Non-sedimenting dispersions in organic polyisocyanates comprising: finely divided solid aromatic isocyanatosulfonic acid uretdiones having a mean particle size of less than 0.02 mm which are liquid at room temperature or may be liquefied by heating to at most 60° C. and which contain a total of from 5 to 60 equivalent % of free and dimerized isocyanate groups of aromatic polyisocyanatosulfonic acids, based on the total number of equivalents of isocyanate groups.

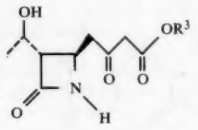
4. A process for producing dispersions comprising: sulfonating an aromatic polyisocyanate with from 5 to 60 mole % of sulfur trioxide or with a corresponding quantity of a sulfonating agent containing or forming sulfur trioxide in the presence of from 0.2 to 25% by weight, based on the weight of the polyisocyanate, of a hydrophobic organic substance which does not contain any hydrophilic substituents inert to isocyanate groups, is soluble in isocyanates, at least at an elevated temperature, is solid or liquid at room temperature and contains polar groups and, optionally contains isocyanate-reactive groups.

4,282,148
SYNTHESIS OF THIENAMYCIN VIA ESTERS OF (3SR, 4RS)-3-[(SR)-1-HYDROXYETHYL]-β,2-DIOXO-4-AZETIDINEBUTANOIC ACID

Thomas M. H. Liu, Westfield; David G. Melillo, Scotch Plains; Kenneth M. Ryan, Clark; Ichiro Shinkai, Westfield, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

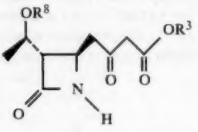
Filed Jan. 14, 1980, Ser. No. 112,022
Int. Cl.³ C07D *705/08, 487/04*
U.S. Cl. 260—239 A **2 Claims**

1. A compound having the structural formula:



wherein R^3 is hydrogen or a readily removable protecting group selected from p-nitrobenzyl, o-nitrobenzyl, benzyl, phenyl, methyl, ethyl, t-butyl, or 1,1,1-trichloroethyl.

2. A compound having the structural formula:



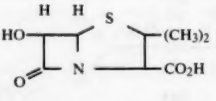
wherein
R^8 is a readily removable acyl group selected from formyl, acetyl, and benzoyl and R^3 is hydrogen or a readily removable protecting group selected from p-nitrobenzyl, o-nitrobenzyl, benzyl, phenyl, methyl, ethyl, t-butyl, or 1,1,1-trichloroethyl.

4,282,149
CARBON AND OXYGEN ANALOGS OF PENICILLIN

John C. Sheehan, Lexington, and Young S. Lo, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 779,828, Mar. 21, 1977, Pat. No. 4,143,046, which is a continuation of Ser. No. 347,772, Apr. 4, 1973, abandoned. This application Sep. 27, 1978, Ser. No. 946,438
Int. Cl.³ C07D *499/00*
U.S. Cl. 260—245.2 R **32 Claims**

1. An oxygen analog of 6-aminopenicillanic acid having the formula:



4,282,150
2,6-DISUBSTITUTED PENEM COMPOUNDS

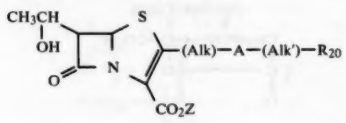
Marcel Menard, Candiac, and Alain Martel, Delson, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 968,663, Dec. 18, 1978, abandoned. This application Sep. 21, 1979, Ser. No. 77,886

Int. Cl.³ C07D *499/00*

U.S. Cl. 260—245.2 R **12 Claims**

1. A compound having the formula



wherein Z is hydrogen or an easily cleavable ester protecting group; Alk is a C_1–C_2 alkylene group optionally substituted by a C_1–C_4 alkyl radical; A is O, S, SO, SO_2 or NR_{21} in which R_{21} is hydrogen, (lower)alkyl, phenyl or phenyl(lower)alkyl; Alk′ is a C_2–C_4 alkylene group and R_{20} is —NHOH, $—NO_2$ or $—NR_{22}R_{23}$ in which R_{22} and R_{23} are each independently hydrogen or (lower)alkyl; or a pharmaceutically acceptable salt thereof.

4,282,151
REACTIVE ASYMMETRICAL DICARBOXYLIC ACID ESTERS AND REAGENTS FOR THE INVESTIGATION OF CARDIAC GLYCOSIDES

Hans-Georg Batz, Tutzing; Hans-Ralf Linke, Wielenbach; Klaus Stellner, Bernried, and Günter Wiemann, Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Fed. Rep. of Germany

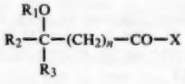
Division of Ser. No. 715,020, Aug. 16, 1976, Pat. No. 4,133,949. This application Mar. 6, 1978, Ser. No. 883,981

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537129

Int. Cl.³ C07D *209/48*

U.S. Cl. 260—326 A **7 Claims**

1. Reactive asymmetrical dicarboxylic acid ester of the formula



wherein

R_1 is alkyl of up to 3 carbon atoms;

R_2 and R_3 are individually selected from alkoxy of up to 3 carbon atoms or together represent an oxygen atom;

X is phthalimido-N-oxy; and

n is 2, 3, 4 or 5.

4,282,152
INTERMEDIATES FOR PREPARING SPECTINOMYCIN AND ANALOGS THEREOF

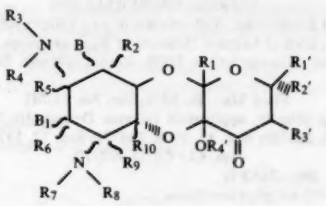
David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 23, 1979, Ser. No. 68,926

Int. Cl.³ C07D *319/24*

U.S. Cl. 260—340.3 **4 Claims**

1. Anomers and asteric mixtures of a compound having the formula:



wherein

R_1 is selected from the group consisting of hydrogen and lower alkyl, R'_1 through R'_3 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl, lower haloalkyl, acyloxyalkyl, lower aminoalkyl, lower alkenyl, lower alkynyl, —OX and $—(CH_n2-)_n—OX$ and isomers thereof with the proviso that R_1, R_2 and R_3 are not hydroxy,

X is selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkynyl;

n is an integer of from one to four;

R_2, R_5, R_6, R_9 and R_{10} are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl; R_3, R_4, R_7 and R_8 are selected from the group consisting of hydrogen, alkyl, lower alkenyl, lower alkynyl, and a blocking group selected from the group consisting of aralkoxycarbonyl, halogenated alkoxycarbonyl and alkoxycarbonyl; with the proviso that one of R_3 and R_4 is always a blocking group; R'_4 is aroyl or acyl; and B and B_1 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio-lower alkyl and thio-lower alkenyl; with the proviso that at least one of R'_1 or R'_2 is always acyloxyalkyl.

4,282,153
PROCESS FOR PREPARING ESTERS OF O,O-DIALKYL DITHIOPHOSPHORIC ACID

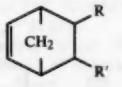
James Minn, Hattiesburg, Miss., assignor to Boots Hercules Agrochemicals Co., Wilmington, Del.

Filed Feb. 22, 1980, Ser. No. 123,549

Int. Cl.³ C07D *319/10*

U.S. Cl. 260—340.6 **9 Claims**

1. In the process for producing a dithiophosphoric acid ester of p-dioxane by reacting an O,O-dialkyl dithiophosphoric acid with a chloro-p-dioxane in the presence of a catalytic amount of zinc chloride, ferrous chloride or stannous chloride and a stoichiometric excess of said acid, the improvement which comprises adding to the system resulting from said reaction from 2.5 to 100 mole % based on the O,O-dialkyl dithiophosphoric acid of a bicyclo(2,2,1)heptene of the formula



where R and R′ are independently hydrogen, alkyl or halogen or together with the carbon atoms to which they are attached form a condensed hydrocarbon ring containing 5 to 6 carbon atoms, reacting said bicycloheptene with the O,O-dialkyl dithiophosphoric acid present in the system whereby an O,O-dialkyl dithiophosphoric acid adduct is formed and recovering the resulting product containing said ester and said adduct.

4,282,154
TAGGED GIBBERELLINS

Manfred Lischewski, Halle-Neustadt, and Günter Adam, Halle Isaale, both of German Democratic Rep., assignors to Akademie der Wissenschaften DER, Berlin, German Democratic Rep.

Filed Mar. 28, 1979, Ser. No. 24,781
Claims priority, application German Democratic Rep., Apr. 13, 1978, 204769; Apr. 13, 1978, 204771; Sep. 12, 1978, 207758
Int. Cl.[3] C07D *307/77*
U.S. Cl. 260—343.3 G 13 Claims

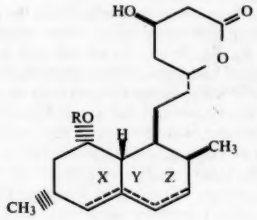
1. [6-^{3}H]-6-Epigibberellines.

4,282,155
ANTIHYPERCHOLESTEROLEMIC COMPOUNDS

Robert L. Smith, and Ta-jyh Lee, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 118,048, Feb. 4, 1980, abandoned. This application Aug. 5, 1980, Ser. No. 175,459
Int. Cl.[3] C07D *309/30;* C07C *59/1*
U.S. Cl. 260—343.5 6 Claims

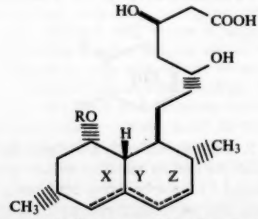
1. A compound of the structure:



in which R is:

C_{1-18} alkyl, straight or branched chain,
C_{4-10} cycloalkyl,
C_{2-10} alkenyl,
C_{5-10} cycloalkenyl,
C_{2-10} alkynyl,
phenyl C_{1-3} alkyl,
substituted phenyl C_{1-3} alkyl in which the substituent is halogen, CF_3 or CN, and
C_{1-10} alkyl having one or more —O—, —S—, or

in the chain, in which the dotted lines at X,Y and Z represent possible double bonds, said double bonds, when any are present, being either X and Z in combination or X, Y or Z alone, and the corresponding hydroxy acids of the formula:



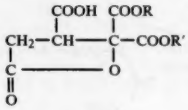
and the pharmaceutically acceptable salts, the loweralkyl esters and the phenyl, dimethylamino and acetylamino substituted loweralkyl esters of said hydroxy acids.

4,282,156
METHOD FOR THE PRODUCTION OF NOVEL ANHYDRIDE POLYCARBOXYLATES

Eddie N. Gutierrez, Fort Lee, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 970,840, Dec. 18, 1978, abandoned. This application Apr. 1, 1980, Ser. No. 136,189
Int. Cl.[3] C07D *307/32*
U.S. Cl. 260—343.6 1 Claim

1. A lactone of the formula



wherein R and R′ are independently selected from the group consisting of methyl and ethyl.

4,282,157
PROCESS FOR THE PREPARATION OF POLYALKENYL-SUBSTITUTED SUCCINIC ANHYDRIDE

Henricus G. P. van der Voort, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 6, 1980, Ser. No. 194,644
Claims priority, application United Kingdom, Oct. 24, 1979, 36863/79
Int. Cl.[3] C07D *307/20*
U.S. Cl. 260—346.74 5 Claims

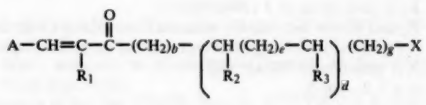
1. In a process for the preparation of polyalkenyl-substituted succinic anhydride which comprises preparing a mixture of an alkene polymer and maleic anhydride, contacting the mixture with chlorine at elevated temperature followed by a post-reaction and then removing excess maleic anhydride, the improvement which comprises after removing excess maleic anhydride, subjecting the formed polyalkenyl succinic anhydride to a thermal treatment at a temperature of from 140°–230° C. for a period of 0.1 to 30 hours.

4,282,158
PROCESS FOR PRODUCING α,β-UNSATURATED KETONES

Richard A. Mueller, Glencoe, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

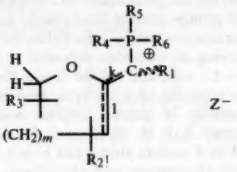
Division of Ser. No. 61,732, Jul. 30, 1979. This application Feb. 27, 1980, Ser. No. 125,302
Int. Cl.[3] C07C *49/23, 49/235, 49/242, 49/248*
U.S. Cl. 260—347.8 8 Claims

1. A process for producing a compound of the formula

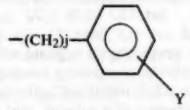


wherein A is a phenyl, furyl or cyclohexyl radical, each being either unsubstituted or substituted with at least one nitro, halogen, hydroxy, alkyl, alkoxy or trifluoromethyl radical with each alkyl radical being a straight-chain or branched-chain group containing from 1 to 6 carbon atoms and with each alkoxy radical being a straight-chain or branched-chain group containing from 1 to 4 carbon atoms; R_1 is hydrogen or a methyl radical; b is an integer from 0 to 4; g is an integer from 1 to 5; d and e are each 0 or 1; the sum of b, e, g and 2d is an integer from 3 to 5; when e is 0 or 1, R_2 and R_3 are each a hydrogen, methyl, ethyl or phenyl radical, the phenyl radical being unsubstituted or substituted with at least one halo or

alkyl radical containing from 1 to 3 carbon atoms or, when e is 0, R_2 and R_3 are interconnected to form, together with the intervening ethylene radical, a phenyl ring that is unsubstituted or substituted with at least one halogen or alkyl radical containing from 1 to 3 carbon atoms; and X is halogen comprising directly condensing in a neutral aprotic medium a benzaldehyde, furfural or cyclohexane-carbaldehyde with a heterocyclic phosphonium salt having the formula



wherein m is an integer from 1 to 3; one of k and l is a double bond and the other is a single bond; Z^- is a halide anion; R_2 and R_3 are attached either to adjacent carbon atoms on the ring or to carbon atoms on the ring separated by only one carbon atom, R_4, R_5 and R_6 are the same or different and are each an alkyl radical containing 1 to 6 carbon atoms, a cycloalkyl radical containing 5 or 5 carbon atoms or a radical having the formula



wherein j is an integer from 0 to 4 and Y is hydrogen, halogen or an alkyl radical containing 1 to 6 carbon atoms, or an alkoxy radical containing 1 to 4 carbon atoms, and said aldehyde reactant being unsubstituted or substituted with at least one nitro halogen, hydroxy, straight-chain or branched-chain alkyl, containing 1 to 6 carbon atoms, straight-chain or branched-chain alkoxy containing 1 to 4 carbon atoms, or trifluoromethyl radical.

4,282,159

PREPARATION OF ALKYLENE OXIDES

Robert S. Davidson, and Richard A. Grieger-Block, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 916,480, Jun. 19, 1978, abandoned. This application Feb. 1, 1980, Ser. No. 117,542

Int. Cl.³ C07D *301/26;* C07J *9/00*

U.S. Cl. 260—348.21 **23 Claims**

1. In a process for the production of epoxides from olefins comprising

(a) wherein the olefin is reacted with iodine in the presence of water and a catalyst to yield iodohydrin and hydrogen iodide as a first reaction product,

(b) adjusting the pH of the reaction product in the presence of a buffer to within the range of 5–10.5 and at a temperature within the range of 30°–90° C. to yield the epoxide and hydrogen iodide,

(c) removing the epoxide from the reaction product of (b) the improvement comprising

(d) introducing an oxygen containing gas to oxidize the hydrogen iodide remaining in the reaction product of reaction (b) after the epoxide has been removed at a pH within the range of 5–10.5 and at a temperature within the range of 30°–90° C. in the presence of a catalyst of copper and an azole selected from the group consisting of imidazole and benzimidazole to convert the iodide to iodine,

(e) recycling the iodine from reaction (d) to reaction (a).

4,282,160

NOVEL TRIARYLMETHANE COMPOUNDS

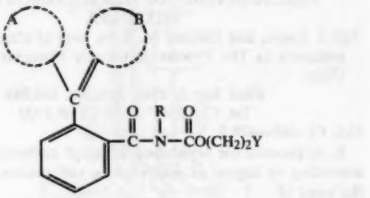
James W. Foley, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 22, 1980, Ser. No. 152,181

Int. Cl.³ C07C *15/16;* C07D *455/06;* C07C *79/22, 79/28;* C09B *11/12*

U.S. Cl. 260—388 **9 Claims**

1. A compound of the formula



wherein A is a phenyl moiety or a naphthyl moiety; B is a 4'-oxo-1'-phenylidene moiety or a 4'-oxo-1'-naphthylidene moiety; R is an alkyl group or a phenyl group, unsubstituted or substituted with a solubilizing group, and Y is an electron-withdrawing group.

4,282,161

NOVEL PURIFICATION PROCESS

Armand Guillemette, 17, Avenue d'Alsace-Lorraine, 93130 Noisy-le-Sec, and Abel Francois, 139, Avenue Carnot, 93140 Bondy, both of France

Filed May 5, 1980, Ser. No. 146,496

Claims priority, application France, May 23, 1979, 79 13117

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.1 **6 Claims**

1. A process for the purification of ursodesoxycholic acid comprising reacting an aqueous solution of an alkali metal salt of ursodesoxycholic acid in the presence of chloroform with an acid and recovering crystalline ursodesoxycholic acid.

4,282,162

RECOVERY OF FLUORINATED EMULSIFYING ACIDS FROM BASIC ANION EXCHANGERS

Jürgen Kuhls, Burghausen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,803

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2903981

Int. Cl.³ C07C *51/42;* C08F *1/88*

U.S. Cl. 260—408 **5 Claims**

1. Process for eluting fluorinated emulsifying acids adsorbed on basic anion exchangers, which comprises eluting the adsorbed fluorinated emulsifying acid from the anion exchanger with a mixture of a dilute mineral acid and an organic solvent.

4,282,163

METHOD OF PRODUCING HYDROGENATED FATTY ACIDS

Masao Suzuki, Nishinomiya; Takeshi Matsuo, and Naomichi Yamada, both of Amagasaki, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Japan

Filed Dec. 11, 1979, Ser. No. 102,533

Claims priority, application Japan, Dec. 19, 1978, 53-157101

Int. Cl.³ C11C *3/12*

U.S. Cl. 260—409 **10 Claims**

1. A method of producing hydrogenated fatty acids comprising hydrogenating a fatty acid, oil or fat in the presence of a hydrogenation catalyst, a reducing metal and a boric acid compound, and distilling the crude hydrogenated fatty acid; or

splitting the hydrogenated oil or fat into a crude hydrogenated fatty acid, and distilling the crude hydrogenated fatty acid.

4,282,164

FRACTIONATION OF ALKYLCARBOXYLATE MIXTURES

Ted J. Logan, and Richard M. King, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 2, 1980, Ser. No. 108,988
Int. Cl.³ C09F *5/10*; C11B *3/00*
U.S. Cl. 260—428.5 **18 Claims**

1. A process for separating an alkyl carboxylate mixture according to degree of unsaturation, said process comprising the steps of

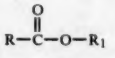
(a) contacting a solution of said mixture in solvent with surface aluminated silica gel adsorbent to selectively adsorb alkyl carboxylate of higher degree of unsaturation and to leave in solution in solvent a fraction of said mixture enriched in content of alkyl carboxylate of lesser degree of unsaturation,

(b) removing solution of fraction enriched in content of alkyl carboxylate of lesser degree of unsaturation from contact with adsorbent which has selectively adsorbed alkyl carboxylate of higher degree of unsaturation,

(c) contacting adsorbent which has selectively adsorbed alkyl carboxylate of higher degree of unsaturation with solvent to cause desorption of adsorbed alkyl carboxylate and provide solution in solvent of fraction enriched in content of alkyl carboxylate of higher degree of unsaturation,

(d) removing solution of fraction enriched in content of alkyl carboxylate of higher degree of unsaturation from contact with adsorbent;

the alkyl carboxylate in said mixture having the formula



in which R is aliphatic chain which contains from 5 to 25 carbon atoms and in which R_1 is alkyl chain containing from 1 to 4 carbon atoms; the solvent in step (a) and the solvent in step (c) having the same composition or different compositions and being characterized by a solubility parameter (on a 25° C. basis) ranging from about 7.0 to about 15.0, a solubility parameter dispersion component (on a 25° C. basis) ranging from about 7.0 to about 9.0, a solubility parameter polar component (on a 25° C. basis) ranging from 0 to about 6.0 and a solubility parameter hydrogen bonding component (on a 25° C. basis) ranging from 0 to about 11.5; said adsorbent being derived from silica gel having a surface area of at least about 100 square meters per gram; said adsorbent being further characterized by a ratio of surface-silicon atoms to aluminum atoms ranging from about 3:1 to about 20:1, a moisture content less than about 10% by weight, and a particle size ranging from about 200 mesh to about 20 mesh; said adsorbent having cation substituents selected from the group consisting of cation substituents capable of forming π complexes and cation substituents not capable of forming π complexes and combinations of these; the solvent in step (a) and the solvent in step (c) and the ratio of surface-silicon atoms to aluminum atoms in the adsorbent and the level of cation substituents capable of forming π complexes being selected to provide selectivity in step (a) and desorption in step (c).

4,282,165

PREPARATION OF TRIMETHYLTIN CHLORIDE FROM DIMETHYLTIN DICHLORIDE

Koei-Liang Liauw, Wyckoff, and Michael H. Fisch, Wayne, both of N.J., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,041
Int. Cl.³ C07F *7/22*
U.S. Cl. 260—429.7 **10 Claims**

1. In a process for the preparation of a trialkyltin chloride in which the alkyl groups contain from one to six carbon atoms, by heating a mixture containing a dialkyltin dichloride, a polyvalent metal having an electrode potential in the range from −0.14 volt to −1.7 volt, and a polar liquid, the improvement comprising the presence of a catalytic amount of a catalyst consisting essentially of stannic chloride and a compound having the formula R_3E in which each R is a hydrocarbon group having 1 to 8 carbon atoms and E is a member of the group consisting of nitrogen and phosphorus, in which the molar proportions of stannic chloride to compound R_3E range from about 1:4 to about 1:1.

4,282,166

PREPARATION OF LOWER TRIALKYLTIN HYDRIDE FROM TRIALKYLTIN CHLORIDE

Koei-Liang Liauw, Wyckoff, and Michael H. Fisch, Wayne, both of N.J., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Apr. 11, 1980, Ser. No. 139,601
Int. Cl.³ C07F *7/22*
U.S. Cl. 260—429.7 **10 Claims**

1. A process for preparing an organic solvent solution of a lower trialkyltin hydride, comprising reacting a lower trialkyltin chloride with an alkali metal bis(2-alkoxyethoxy)aluminum dihydride in the presence of a solvent, said solvent consisting essentially of hydrocarbon boiling in the 50° to 200° C. range, whereby lower trialkyltin hydride is obtained.

4,282,167

CONVERSION OF AMIDES TO ISOCYANATES VIA PHASE TRANSFER CATALYSIS

Anita O. Sy, and Joseph W. Raksis, both of Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 16, 1980, Ser. No. 112,649
Int. Cl.³ C07C *118/04*
U.S. Cl. 260—453 P **21 Claims**

1. A process for the preparation of an organic isocyanate which comprises contacting a solution of a substantially water-insoluble aliphatic or cycloaliphatic organic amide in a substantially water-immiscible organic solvent, with an alkali metal hypobromite and a quaternary salt as phase transfer catalyst and a sufficient amount of water to form a continuous or discontinuous aqueous phase and form an organic isocyanate in the organic phase.

18. A process for the preparation of an organic isocyanate which comprises contacting a solution of a substantially water-insoluble aliphatic or cycloaliphatic N-halo organic amide in a substantially water-immiscible organic solvent, with an alkali metal hypobromite and a quaternary salt as phase transfer catalyst and a sufficient amount of water to form an organic isocyanate in the organic phase.

4,282,168

S-(SUBSTITUTED PHENYL) N-ALKYL THIOLCARBAMATES

Jay K. Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 702,563, Jul. 6, 1976, Pat. No. 4,055,657. This application Oct. 17, 1977, Ser. No. 843,014
Int. Cl.³ C07C *155/02*
U.S. Cl. 260—455 A **4 Claims**

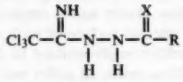
1. S-3,4-dichlorophenyl N-methylthiolcarbamate.

4,282,169
SELECTED 2-ACYL- OR 2-THIOACYL-1-TRICHLOROACETIMIDOYLHYDRAZINES AND THEIR USE AS FUNGICIDES

Eugene F. Rothgery, North Branford, and Lawrence E. Katz, Orande, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Feb. 19, 1980, Ser. No. 122,202
Int. Cl.³ C07C *109/087, 109/10;* A01N *9/20*
U.S. Cl. 260—455 A 14 Claims

1. A compound of the formula:



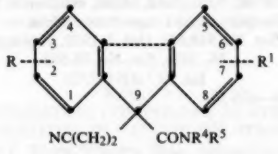
wherein X is an atom selected from the group consisting of oxygen and sulfur; and R is hydrogen, a lower alkyl group having 1 to 4 carbon atoms, a lower alkoxy group having 1 to 4 carbon atoms, or an unsubstituted or substituted phenyl group.

4,282,170
9-CARBAMOYL-9-(2-CYANOETHYL)FLUORENES

Edward R. Lavagnino; Andrew J. Pike, and Jack B. Campbell, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 17, 1980, Ser. No. 141,229
Int. Cl.³ C07C *121/78*
U.S. Cl. 260—465 D 6 Claims

1. A compound of the formula



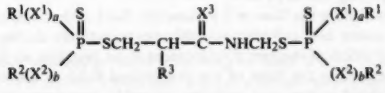
wherein R and R^1 independently are hydrogen, C_1–C_4 alkyl, fluoro or chloro; R^4 and R^5 independently are hydrogen or C_1–C_6 alkyl.

4,282,171
PHOSPHORUS AND SULFUR CONTAINING AMIDES AND THIOAMIDES

Donald I. Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 503,892, Sep. 6, 1974, Pat. No. 4,032,461. This application Jan. 17, 1977, Ser. No. 759,614
Int. Cl.³ C07F *9/165, 9/40*
U.S. Cl. 260—928 3 Claims

1. A compound having the formula

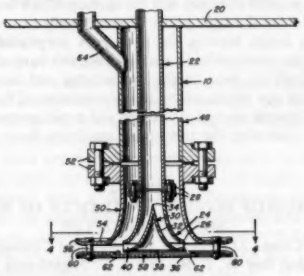


wherein each of R^1 and R^2 is a hydrocarbon radical selected from phenyl, naphthyl, alkylphenyl, alkylnaphthyl, phenylalkyl, naphthylalkyl, alkylphenylalkyl, and alkylnapthylalkyl, R^3 is selected from hydrogen, halogen, lower alkyl, or substituted lower alkyl; each of X^1, X^2 and X^3 is oxygen or sulfur; and a and b are each 0 or 1.

4,282,172
GAS TO LIQUID DIFFUSER

William J. McKnight, Tyler, Tex., assignor to Howe-Baker Engineers, Inc., Tyler, Tex.

Filed Sep. 11, 1980, Ser. No. 186,328
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—76 7 Claims



1. For use in an ozonator system incorporating a tank within which liquid is to be ozonated; a static diffuser, said diffuser comprising a liquid feed pipe having a discharge end portion adapted for positioning within the tank below the level of liquid within the tank, said discharge end portion being outwardly flared, a static flow modifier positioned within the flared discharge end portion and defining therewith a liquid discharge opening laterally directed relative to said pipe, means for producing a pressurized flow of liquid through said pipe and out said discharge opening, an ozone feeding shroud outward of and generally paralleling said pipe, a discharge slot in said shroud in outwardly aligned relation with said discharge opening for passage of discharging liquid therethrough, said shroud, at the shroud slot, defining a general venturi configuration for acceleration of the liquid passing therethrough and entrainment of ozone within the discharging liquid.

4,282,173
METHOD FOR MANUFACTURING REFRACTORY MATERIAL HAVING NUMEROUS THROUGH PORES EXTENDING IN A CERTAIN DIRECTION

Tsunemi Ochiai; Goro Saiki; Teruo Shimao, all of Himeji; Toshitaro Saito, Toyokawa; Shizuo Nakanishi, Okazaki, and Takeo Saeki, Toyokawa, all of Japan, assignors to Nippon Steel Corporation and Isolite Insulating Product Company Limited (Isolite Kogyo K.K.), both of Tokyo, Japan

Continuation-in-part of Ser. No. 869,445, Jan. 16, 1978, abandoned, which is a continuation of Ser. No. 714,970, Aug. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 559,524, Mar. 18, 1975, abandoned. This application Nov. 13, 1978, Ser. No. 959,731
Claims priority, application Japan, Oct. 31, 1974, 49-125895; Oct. 31, 1974, 49-125896; Oct. 31, 1974, 49-125897; Oct. 31, 1974, 49-125898; Oct. 31, 1974, 49-125899; Oct. 31, 1974, 49-125900
Int. Cl.³ C04B *33/32*
U.S. Cl. 264—59 12 Claims

1. In a method for making a shaped article of a refractory material suitable for contact with molten metal, said shaped article being the type wherein a refractory material in paste or slurry state is contacted with a woven fabric and the thus contacted fabric and refractory material are laminated into the desired shape and the liminate preform block thus obtained is heated to dry the block and to burn off the combustible fibers of said fabric and then fired to sinter said refractory material, the improvement which comprises at least one of the weft fibers or the warp fibers of the woven fabric being combustible

and said combustible fibers having a diameter between 40 to 300 microns, and wherein a vibration between about 900 to 10,000 Vpm and an amplitude of 0.1 to 1.0 mm is applied to said woven fabric in said laminating step to remove air bubbles from and increase the uniformity of the laminate, and the combustible portion of the fabric is removed by said heating to produce a multiplicity of pores extending through said shaped refractory article corresponding to the thus removed fibers and wherein prior to the burn off, the surface of the body which is parallel to the through pores is temporarily covered with an insulating layer, leaving the end faces perpendicular to the through pores uninsulated and wherein the burn off is carried out by applying heat to the uninsulated end faces so as to exhaust the gas produced by the combustion of the fibers and produce smooth escape of the gas and avoid pressure buildup, and then removing the temporary insulating layer.

4,282,174

METHOD OF MAKING AN ARTICLE OF BONDED METAL PARTICLES

Barry J. Chase, 22 Orchard Ave., Sonning Common, Reading, Berkshire; Roy W. E. Rushforth, 77 Nightingale Rd., Woodley, Reading, Berkshire, and Gordon J. Selman, 59 Peppard Rd., Sonning Common, Reading, Berkshire, all of England

Filed Feb. 12, 1980, Ser. No. 120,889

Claims priority, application United Kingdom, May 13, 1977, 2027/77

Int. Cl.[3] **B29C** *3/00*

U.S. Cl. 264—111 **11 Claims**

1. A process for producing a metallic article comprising forming a mixture of metallic particles selected from the group consisting of platinum group metals, gold and silver and particles of a thermoplastic material, placing said mixture in a mold and molding the mixture under pressure and at elevated temperature, and removing from said mold said metallic article, the metallic particles comprising at least 92.5% by weight of the article and having a size falling within the range $\frac{1}{2}$ to 50 microns, and the thermoplastic polymeric material having a minimum dimension of $\frac{1}{2}$ micron.

4,282,175

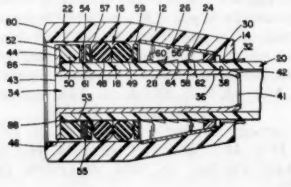
STAB-TYPE COUPLING AND METHOD

Frank R. Volgstadt, Madison, and David P. Passerell, Geneva, both of Ohio, assignors to Perfection Corporation, Madison, Ohio

Continuation of Ser. No. 899,813, Apr. 25, 1978. This application Oct. 11, 1979, Ser. No. 83,861

Int. Cl.[3] **B29C** *19/00*

U.S. Cl. 264—248 **2 Claims**



1. A method of assembly of a double ended stab-type coupling for connecting a first smooth wall non-metallic pipe to a second smooth wall non-metallic pipe, said method comprising the steps of:

(a) providing a first non-metallic coupling body having a first end and a second end and an internal recess adapted to receive the end portion of the first smooth wall non-metallic pipe, said internal recess defining a generally frusto-conical surface;

(b) providing a second non-metallic coupling body having a first end and a second end and an internal recess adapted to receive the end portion of the second smooth wall non-metallic pipe, said internal recess defining a generally frusto-conical surface;

(c) providing a first and second elongated hollow insert, each of said inserts having a radial flange extending outwardly therefrom;

(d) providing a first and second seal ring;

(e) providing a first and second retaining collet, each of said collets having a tapered external surface which converges toward one end thereof and a toothed internal surface;

(f) providing a first and second generally annular spacer ring;

(g) inserting a respective retaining collet, seal ring, spacer ring, and hollow insert into a respective coupling body such that the internal surface of each respective coupling body is generally complementary to the external surface of each respective retaining collet and the radial flange of each respective hollow insert is generally disposed adjacent the second end of each respective coupling body;

(h) fusing the respective coupling bodies together at the second ends thereof.

4,282,176

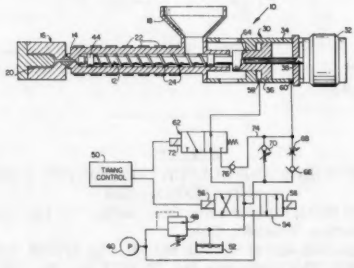
INJECTION MOLDING MACHINE WITH REGENERATIVE FEED SYSTEM

Robert E. Farrell, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.

Division of Ser. No. 948,082, Oct. 2, 1978. This application Sep. 24, 1979, Ser. No. 78,560

Int. Cl.[3] **B29F** *1/06*

U.S. Cl. 264—328.13 **12 Claims**



1. A method of operating an injection molding machine having a ram which is displaced by an unbalanced piston and cylinder assembly to inject settable material into a mold cavity comprising the steps of:

controlling the flow of a pressurized fluid to the unbalanced piston and cylinder assembly regeneratively during one portion of the ram displacement in an injection stroke;

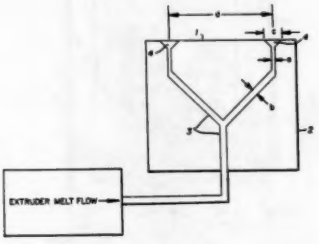
controlling the flow of the pressurized fluid to the unbalanced piston and cylinder assembly nonregeneratively during another portion of the ram displacement in the injection stroke; and

controlling the flow of the pressurized fluid to the unbalanced piston and cylinder assembly nonregeneratively during at least one portion of the ram displacement in a direction opposite to the injection stroke.

4,282,177
METHOD FOR REDUCING SHARKSKIN MELT FRACTURE DURING EXTRUSION OF ETHYLENE POLYMERS

Stuart J. Kurtz, Martinsville; Theodore R. Blakeslee, III, Hillsborough, and Leonard S. Scarola, Union, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 1,932, Jan. 8, 1979. This application Dec. 12, 1979, Ser. No. 99,061
The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.
Int. Cl.[3] B29D *23/04*
U.S. Cl. 264—564 16 Claims

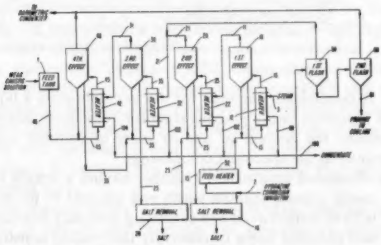


1. A process for reducing the melt fracture during extrusion of a molten narrow molecular weight distribution linear ethylene polymer under conditions of flow rate and melt temperature which would otherwise produce higher levels of melt fracture, which comprises extruding said polymer through a die having a die gap greater than about 50 mils and wherein at least a portion of one surface of the die lip and/or die land in contact with the molten polymer is at an angle of divergence or convergence relative to the axis of flow of the molten polymer through the die.

4,282,178
USE OF HYDRAZINE COMPOUNDS AS CORROSION INHIBITORS IN CAUSTIC SOLUTIONS

Gyaneshwari P. Khare, Wichita, Kans., assignor to Vulcan Materials Company, Wichita, Kans.

Continuation-in-part of Ser. No. 94,390, Nov. 15, 1979, abandoned. This application Jul. 25, 1980, Ser. No. 172,703
Int. Cl.[3] C23F *11/06*
U.S. Cl. 422—13 10 Claims



2. An aqueous solution according to claim 1 comprising at least 10% sodium hydroxide, sodium chlorate as an impurity, and hydrazine in a corrosion-inhibiting amount of up to 1000 ppm.

5. In a process wherein an aqueous solution comprising at least 10% of sodium hydroxide is heated at a temperature between about 100° and 175° C. in contact with a metal surface composed in major part of nickel, the improvement which comprises adding to said solution a corrosion-inhibiting amount of hydrazine or an equivalent amount of an inorganic or organic derivative of hydrazine.

4,282,179
DISINFECTION WITH ISOPROPANOL VAPOR

Donald A. Gunther, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Feb. 8, 1980, Ser. No. 119,788
Int. Cl.[3] A61L *2/06, 2/20*
U.S. Cl. 422—27 6 Claims

1. A method of disinfecting heat-sensitive or liquid-sensitive articles that are brought into physical contact with patients in the course of examination, surgery or therapy and that consequently are subject to contamination with microorganic pathogens, the said method comprising:

bringing such article subsequent to exposure to any such contamination into direct, sustained and totally enveloping contact with a substantially liquid-free vapor at a pressure not substantially exceeding atmospheric pressure, said vapor consisting essentially of from 40% by volume to 100% by volume of isopropanol and the remainder consisting predominantly of water vapor;

maintaining said contact at a temperature between about 45° C. and 65° C. for a period effective to destroy said pathogens;

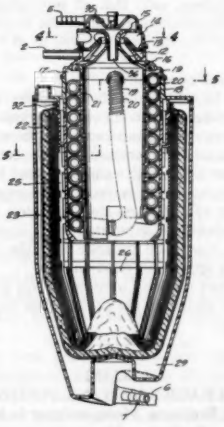
removing the said article from contact with the isopropanol-containing vapor; and

allowing any condensed isopropanol on the surface of the so-treated article to evaporate from the said surface.

4,282,180
BLOOD OXYGENATOR

Donald A. Raible, Orange, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 689,971, May 26, 1976, which is a continuation-in-part of Ser. No. 584,464, Jun. 6, 1975, abandoned. This application Aug. 9, 1977, Ser. No. 823,149
Int. Cl.[3] A61M *1/03*
U.S. Cl. 422—46 12 Claims



1. A blood oxygenator comprising a vertically oriented housing having an upper and lower end, blood inlet means and oxygen inlet means connected to and communicating with said upper end of said housing, a downwardly extending blood-oxygen mixing chamber, said blood and oxygen inlet means each being adapted to direct the blood and oxygen downwardly to said mixing chamber to co-currently contact blood and oxygen, said mixing chamber having means therein for inducing secondary flow in the blood-oxygen mixture which

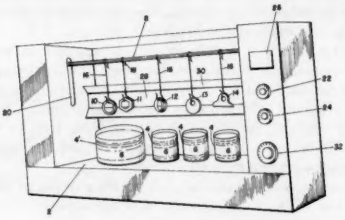
flows therethrough, blood outlet means connected to and communicating with said lower end and being axially spaced from said blood inlet means, and defoaming means located between said blood inlet and outlet means.

4,282,181

ACCELERATED CORROSION TEST APPARATUS

Danny A. Pierce, Columbus, Ohio, assignor to IPM Corporation, Columbus, Ohio

Filed Dec. 11, 1978, Ser. No. 968,056
Int. Cl.[3] G01N *17/00*
U.S. Cl. 422—53 **1 Claim**



1. In an apparatus for accelerated testing of the corrosion resistance of a plurality of parts comprising:

a support bar disposed substantially in the horizontal direction,

means connected to the support bar for individually supporting each part to be tested in a position depending downwardly from the support bar, the supporting means being substantially corrosion resistant,

a reservoir for holding a liquid corrosive media, the reservoir located vertically below the support bar and sized sufficient to allow immersion of each part depending from the support bar on the supporting means, the reservoir being substantially corrosion resistant, and

means for repetitively raising and lowering the support bar in a vertical plane, while the support bar retains its horizontal disposition, such that all supported parts are immersed in the corrosive media for the same period of time each instance that the bar is moved to its lowermost position;

the improvement comprising

a drying zone located vertically above the reservoir,

means for maintaining an elevated temperature within a range of from room temperature to about 75° C., in the drying zone, said temperature being controlled to within plus or minus 10° C. with a silicon coated heating element mounted on the inside surface, with respect to the test environment, of a stainless steel reflector,

means for retaining all supported parts completely within the drying zone each instance that the support bar is moved to its uppermost position, and

a housing, at least partially transparent, for isolating the test environment including the drying zone from the ambient surroundings.

4,282,182

PACKAGE SAMPLING SYSTEM

Milo E. Webster, Braintree, Mass., assignor to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Apr. 20, 1980, Ser. No. 142,463
Int. Cl.[3] G01N *1/10, 1/24*
U.S. Cl. 422—68 **16 Claims**

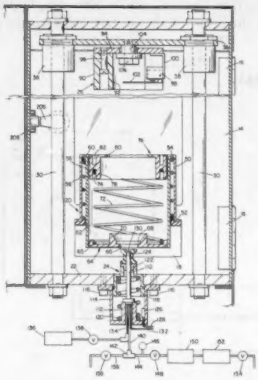
1. Apparatus for analyzing the contents of a sealed package comprising

a package alignment assembly,

a probe assembly,

said package alignment assembly including a support surface having an aperture therein for positioning the wall of the package to be punctured in alignment with said probe assembly, and alignment structure resiliently supported in spaced relation to said support surface for positioning the package to be analyzed in alignment with said probe assembly,

said probe assembly having a puncturing tip portion for puncturing the wall of a package on said support surface



and a flow path extending from said tip portion for withdrawing a sample to be analyzed from said package,

a drive for causing relative motion of said probe assembly and said package support surface towards one another to cause said puncturing tip portion to penetrate the wall of a sealed package on said support surface, and

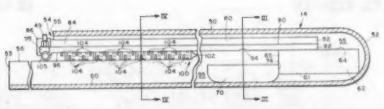
an analysis unit connected to said flow path for analyzing the sample of the contents withdrawn from said package.

4,282,183

COMBUSTION SYSTEM

Roger L. Bredeweg, Stevensville; Larry S. O'Brien, St. Joseph, and Charles B. Vallance, Berrien Springs, all of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Nov. 9, 1978, Ser. No. 958,967
Int. Cl.[3] G01N *31/12*
U.S. Cl. 422—78 **35 Claims**



1. A combustion chamber for use in combusting a liquid or solid specimen into a gaseous state for subsequent analysis to determine the amount of one or more constituent elements contained in the specimen comprising:

an elongated combustion chamber having a length significantly greater than its width and adapted to be oriented with its longitudinal axis extending generally horizontally, said chamber being of relatively thin walled construction and continuously open at one end to receive samples to be combusted which are positioned in said chamber through said open end, said chamber including an elongated horizontally extending floor for supporting a sample thereon and enclosed at its opposite end; wherein said combustion chamber is made of a material to withstand temperatures of combustion in excess of 2000° F.; an eduction tube means communicating with the interior of said chamber for withdrawing specimen gases therefrom from a position closer to said enclosed end than to said open end; and

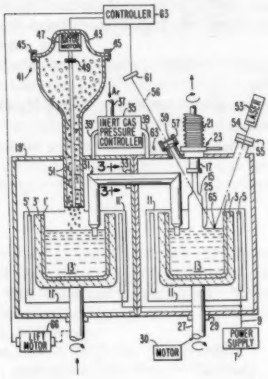
means for providing a sealing curtain of gas near said continuously open end of said combustion chamber.

4,282,184

CONTINUOUS REPLENISHMENT OF MOLTEN SEMICONDUCTOR IN A CZOCHRALSKI-PROCESS, SINGLE-CRYSTAL-GROWING FURNACE

George Fiegl, Palo Alto, and Walter Torbet, Newark, both of Calif., assignors to Siltec Corporation, Menlo Park, Calif.

Filed Oct. 9, 1979, Ser. No. 83,169
Int. Cl.[3] C30B *15/12*
U.S. Cl. 422—106 15 Claims



1. Apparatus for producing solid crystals from a melted material comprising:

A. a drawing crucible for containing a melt of said material from which a solidifying crystal is drawn;

B. crystal drawing means to progressively draw a solidifying crystal from melt contained in said drawing crucible;

C. heater means surrounding said drawing crucible for applying the thermal energy to said melt required to permit formation of said solidifying crystal;

D. means to rotate said drawing crucible relative to said heater during the drawing of a solidifying crystal from melt contained therein;

E. a melt replenishment crucible separate from but adjacent to said drawing crucible, containing melt for replenishing melt in said drawing crucible;

F. heater surrounding said replenishment crucible for forming and maintaining a melt of said material in said replenishment crucible;

G. a siphon tube providing fluid communication between said drawing and melt replenishment crucibles, said tube having its opposite ends respectively immersed within the melt contained in said replenishment crucible and within the melt contained in said drawing crucible;

H. means to initiate flow of melted material through said siphon tube;

I. level sensing means to sense the level of said melted material in one of said crucibles and generate an electrical signal indicative of said sensed level; and

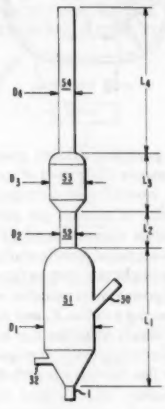
J. level control means responsive to said sensed level for automatically controlling the level of melt in said drawing crucible, said level control means including a lift mechanism connected to said replenishment crucible for changing the elevation of the same relative to said drawing crucible and thereby cause automatic flow of melt material between said replenishment and drawing crucibles through said siphon tube to control the melt level in the drawing crucible.

4,282,185

CHLORINE AND IRON OXIDE FROM FERRIC CHLORIDE - APPARATUS

James W. Reeves, Wilmington, N.C.; Robert W. Sylvester, Wilmington, Del., and David F. Wells, Avondale, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 899,696, Apr. 24, 1978. This application Jun. 15, 1979, Ser. No. 49,208
Int. Cl.[3] B01J *8/28*; F27B *15/08*
U.S. Cl. 422—142 5 Claims



1. In a reactor including a means for accepting gaseous and solid feed materials, means for forming a fluidized bed from said solids and gases entering the reactor, a means for reacting the feed materials in a fluidized bed, a means for passing a portion of the fluidized bed out of the reactor, and a means for receiving recycled portions of the fluidized bed into the reactor, the improvement wherein the reactor comprises four vertical zones for reacting feed materials in open communication with each other without any restrictive means in the opening between each zone the vertical axis of each zone being in the same plane, said reactor comprising

(a) a first zone provided by a generally cylindrical vessel with a conical bottom having inlets for feed materials and recycled bed material and inlets for receiving a fluidizing medium for forming a fluidized bed, a length-to-diameter ratio, $(L/D)_1$, from 2:1–4:1, and an outlet at the top connected to

(b) a second zone provided by a first cylindrical conduit having a length-to-diameter ratio, $(L/D)_2$, from 1:1–15:1 and an outlet at the top connected to

(c) a third zone provided by a second cylindrical conduit having a region of enlarged cross section with a length-to-diameter ratio, $(L/D)_3$, from 1:1–4:1 and an outlet at the top connected to

(d) a fourth zone provided by a third cylindrical conduit having a length-to-diameter ratio, $(L/D)_4$, of from 10:1–50:1 and an outlet at the top, the diameter of the vessel in the first zone being from 1.1–1.8 times the diameter of the third zone and from 3–5 times the respective diameters of the second and fourth zones.

4,282,186
CARTRIDGE FOR PURIFYING EXHAUST GAS

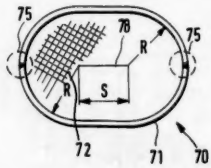
Manfred Nonnenmann, Schwieberdingen; Wolfgang Hesse, Remseck; Klaus Haller, Korntal, and Helmut Bardong, Stuttgart, all of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,019

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856030

Int. Cl.³ F01N *3/28, 7/18*

U.S. Cl. 422—180 **12 Claims**



1. A cartridge for purifying exhaust gases, comprising:

a catalyst support matrix comprised of spirally wound, alternately disposed smooth and corrugated metallic sheets defining a plurality of exhaust gas passageways therebetween, said catalyst support matrix comprising an oval transverse cross-sectional configuration, defined by opposing parallel straight side circumferential segments of a length S and opposing semi-circular end circumferential segments each having a radius R, and wherein said spirally wound metallic sheets from the top half and the bottom half of said oval configuration contiguously abut along a central interface line having a length S;

a metal jacket housing said catalyst support matrix, the interior of said metal jacket holding said catalyst support matrix by means of a press fit relationship with the exterior of said catalyst support matrix along at least a circumferential portion of its length; and

a bond between the exterior of said catalyst support matrix and the interior of said metal jacket formed in said circumferential portion.

4,282,187
PRODUCTION OF SYNTHETIC HYDROCARBONS FROM AIR, WATER AND LOW COST ELECTRICAL POWER

Marshall J. Corbett, E. Northport, and Salvatore C. Salina, Bethpage, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,880

Int. Cl.³ B01J *8/04*

U.S. Cl. 422—190 **6 Claims**

1. A system for producing methanol comprising:

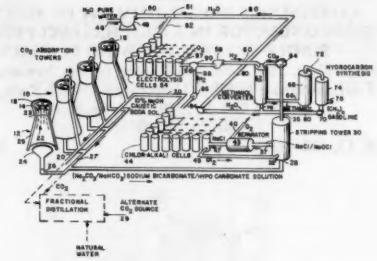
at least one CO_2 absorbtion venturi tower;

means for delivering NaOH solution to the tower;

means located in the tower for forming droplets of NaOH solution and directing the droplets to pass through air, in the tower, thus causing CO_2 in the air to be absorbed by the solution which results in a carbonate solution of sodium bicarbonate/hypo carbonate;

means receiving the carbonate solution and combining Cl_2 therewith for stripping CO_2 as a first byproduct from the carbonate solution;

means for transferring the CO_2 to a methanol converter;



electrolysis means for disassociating H_2 and O_2 from water provided to it; and

means for transferring the H_2 to the methanol converter.

4,282,188
PROCESS FOR THE RECOVERY OF URANIUM CONTAINED IN PHOSPHATED SOLUTIONS

Jean-Michel Demarthe, Viroflay; Paolo Fossi, Elancourt, and Dominique Guery, Plaisir, all of France, assignors to Minemet Recherche, Trappes, France

Filed Aug. 23, 1978, Ser. No. 935,943

Claims priority, application France, Aug. 25, 1977, 77 25899

Int. Cl.³ B01D *11/00*

U.S. Cl. 423—10 **20 Claims**

1. A process for recovering uranium contained in phosphate solutions comprising the steps of:

(a) contacting a uranium-containing phosphate solution with an organic phase which contains a diester of pyrophosphoric acid, whereby a product containing an organic phase and an aqueous phase results, with the uranium being extracted from the aqueous phase into the organic phase;

(b) contacting the resulting uranium-containing organic phase with an alkaline solution, in an amount sufficient to, and at a pH which will, enable extraction of at least a portion of the uranium into the aqueous phase which is present after the addition of the alkaline solution;

(c) adding a uranium precipitation agent to the aqueous phase resulting from step (b) so as to form a uranium-containing precipitate, where the agent is present in sufficient amount for and is capable of resulting in the formation of the precipitate;

(d) acidifying the liquid of the product resulting from step (c);

(e) agitating the resulting acidified liquid;

(f) separating the organic phase from the aqueous phase of the liquid; and

(g) recycling the organic phase to step (a); and wherein the precipitate produced in step (c) is recovered from the liquid prior to conducting the recycling step.

4,282,189

PRECIPITATION OF METAL VALUES FROM ORGANIC MEDIA

Gunnar Thorsen, Steinhaugen 41,, 7000 Trondheim, Norway, and Andrew J. Monhemius, 64 S. Western Rd., St. Margarets, Twickenham, Middlesex, England

Filed Feb. 6, 1980, Ser. No. 119,112
Claims priority, application United Kingdom, Feb. 7, 1979, 04232/79
Int. Cl.[3] C01B *13/18, 13/36*
U.S. Cl. 423—24 13 Claims

1. A process for stripping metal values from an organic liquid medium, said process comprising:

providing an organic liquid medium loaded with metal ions, said organic liquid medium being substantially immiscible with water and comprising an organic carboxylic acid cation exchanger; and

contacting the loaded liquid organic medium with an adqueous phase at a temperature of contact which is sufficiently high so as to cause the metal values to precipitate as metal oxide as herein defined in the presence of the organic liquid medium.

6. The process of claim 1, wherein the organic medium is loaded with ion selected from iron, copper and nickel.

4,282,190

PROCESS FOR THE MANUFACTURE OF IRON AND ALUMINUM-FREE ZINC CHLORIDE SOLUTIONS

Wolfgang Müller, Mannheim, and Lothar Witzke, Brühl, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Nov. 8, 1979, Ser. No. 92,535
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849004
Int. Cl.[3] C01G *9/04, 49/06;* C01F *7/34*
U.S. Cl. 423—104 6 Claims

1. A process for the removal of iron and aluminum values from acidic solutions thereof with zinc chloride comprising:

(a) treating the solution for a period of from about 0.1 to 3 hours at a pH of about 1.5 to 4 at a temperature from about 150° to 260° C. and a pressure of from 6 to 48 bar to convert the iron and aluminum values to the hydroxide or oxide hydrate,

(b) rapidly cooling the reaction mixture to form a precipitate, and

(c) separating the precipitate from the solution,

and then subjecting the separated solution to steps (a), (b), and (c) again.

4,282,191

ZINC REMOVAL FROM ALUMINATE SOLUTIONS

Robert D. Bird, and Harry R. Vance, both of Portland, Tex., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jul. 25, 1980, Ser. No. 172,420
Int. Cl.[3] C01F *7/06*
U.S. Cl. 423—119 7 Claims

1. In a process for the preparation of $NaAlO_2$ from an alumina value containing material wherein a caustic sodium aluminate process liquor is subjected to a treatment to reduce the level of zinc impurity by the addition of ZnS seed in the presence of sulfide ion, the improvement comprising:

(A) forming the zinc sulfide seed by a process comprising the steps of:

(I) dissolving ZnO in NaOH to produce a caustic Na_2ZnO_2 solution; and

(II) reacting the solution of step (I) with Na_2S to form ZnS, the Na_2S being present at a level sufficient to provide a concentration of Na_2S of at least about 0.15 g/l of Na_2S when the product of this step is added to the process liquor;

(B) adding the product of step (II) to the process liquor to precipitate as ZnS, zinc contained in the process liquor in the form of sodium zincate; and

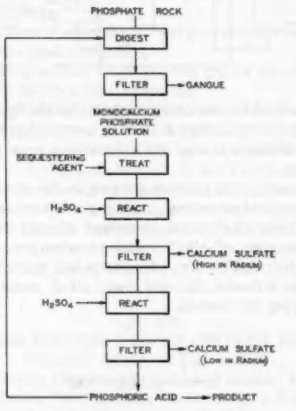
(C) filtering the process liquor to yield an $NaAlO_2$ liquor containing less than about 15 mg/l zinc as ZnO.

4,282,192

PROCESS FOR PRODUCING A CALCIUM SULFATE PRODUCT CONTAINING LOW AMOUNTS OF RADIUM

Harold V. Larson, Houston, Tex., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 27, 1980, Ser. No. 125,007
Int. Cl.[3] C01B *25/16;* C01F *11/46, 13/00*
U.S. Cl. 423—166 5 Claims



1. A process for producing a calcium sulfate product having low amounts of radium comprising the steps of:

(a) adding at least one sequestering agent to a substantially homogeneous radium-containing monocalcium phosphate solution, the amount of said sequestering agent added being at least the stoichiometric amount necessary to complex with said radium in said solution;

(b) then reacting said solution with sufficient sulfuric acid to form a monocalcium phosphate/phosphoric acid solution, to precipitate a first calcium sulfate product and to precipitate at least a portion of said radium, the amount of said sulfuric acid added being from about 5% up to about 50% of the stoichiometric amount necessary to react with the total Ca^{++} present in said monocalcium phosphate solution in forming calcium sulfate;

(c) separating said resulting monocalcium phosphate/phosphoric acid solution from said first radium-containing calcium sulfate precipitate;

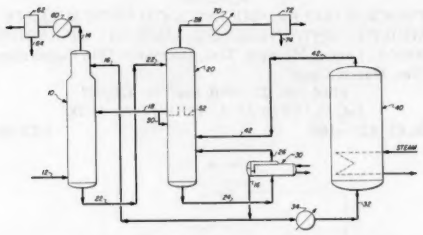
(d) then reacting the monocalcium phosphate/phosphoric acid solution with sufficient sulfuric acid to form a phosphoric acid solution and to precipitate a second calcium sulfate product, the amount of sulfuric acid being at least sufficient to react with substantially all of the Ca^{++} present in said monocalcium phosphate/phosphoric acid solution in forming calcium sulfate; and

(e) separating the phosphoric acid solution from the second calcium sulfate product, said second calcium sulfate product having a lower radium concentration than said first calcium sulfate product.

4,282,193
PROCESS FOR CONVERTING CYCLIC UREA TO CORRESPONDING DIAMINE IN A GAS TREATING SYSTEM

Michael T. Melchior, Scotch Plains; George E. Milliman, Fanwood; Chang J. Kim, Somerset, and George R. Chludzinski, South Orange, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 19, 1980, Ser. No. 122,588
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—223 **13 Claims**

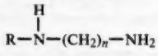


1. A method for removing carbon dioxide from a gaseous mixture including carbon dioxide in a scrubbing system comprising an absorption zone and a desorption zone, said method comprising:

(a) contacting the gaseous mixture in the absorption zone with an acid absorbing scrubbing solution comprising:

(i) A basic alkali metal compound selected from the class consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures; and

(ii) an activator for said basic alkali metal compound having the formula



where R is a secondary or tertiary alkyl group and n is the integer 2, 3 or 4, wherein at least some of the carbon dioxide is absorbed by the scrubbing solution and wherein at least some of said activator is converted to cyclic urea;

(b) passing at least a portion of the scrubbing solution containing the cyclic urea from the absorption zone to the desorption zone wherein the CO_2 loading of the scrubbing solution is reduced to below about 20%;

(c) passing at least a portion of the scrubbing solution containing the cyclic urea from the desorption zone to a thermal conversion zone maintained at a temperature within the range of 120° C. to 200° C. wherein at least a portion of the cyclic urea is converted back to the activator; and

(d) returning the scrubbing solution from the thermal conversion zone back to the scrubbing system.

4,282,194
PROCESS FOR CONVERTING CYCLIC UREA TO CORRESPONDING DIAMINE IN A GAS TREATING SYSTEM

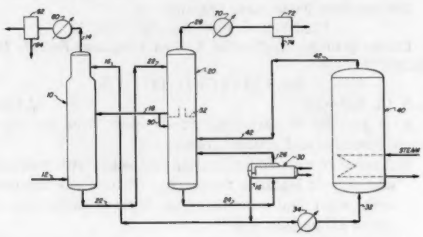
Geoffrey R. Say; James R. Hays, Sr., both of Baton Rouge, La.; Jagannathan N. Iyengar, Rockaway, and Barbara A. Hacker, Princeton, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 19, 1980, Ser. No. 122,589
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—223 **11 Claims**

1. A method for removing carbon dioxide from a gaseous mixture including carbon dioxide which comprises:

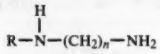
(a) contacting the gaseous mixture in an absorption zone with an acid-absorbing scrubbing solution comprising:

(i) a basic alkali metal compound selected from the class

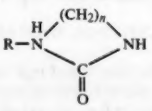


consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures; and

(ii) an activator for said basic alkali metal compound having the formula



where R is a secondary or tertiary alkyl group and n is the integer 2, 3 or 4, whereby at least some of the acidic component is absorbed by the scrubbing solution and whereby at least some of said activator is converted to a cyclic urea having the formula



(b) passing at least a portion of the scrubbing solution containing the absorbed carbon dioxide and the cyclic urea from the absorption zone to a desorption zone wherein the carbon dioxide loading of the scrubbing solution is reduced to below about 20%; and

(c) passing at least a portion of the scrubbing solution from the desorption zone to a thermal conversion zone maintained at a temperature within the range of 120° C. to 200° C. to convert at least a portion of the cyclic urea back to the activator, the thermal conversion zone communicating with both the absorption zone and the desorption zone whereby a portion of the scrubbing solution in the thermal conversion zone relatively rich in carbon dioxide is vaporized and returned to the desorption zone, and another portion of the scrubbing solution in the thermal conversion zone relatively lean in carbon dioxide is returned to the absorption zone.

4,282,195
SUBMICRON TITANIUM BORIDE POWDER AND METHOD FOR PREPARING SAME

Howard H. Hoekje, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 546,838, Feb. 3, 1975, abandoned. This application Feb. 12, 1979, Ser. No. 11,596
Int. Cl.³ C01B *35/04*
U.S. Cl. 423—289 **14 Claims**

1. Submicron titanium diboride powder comprising at least 99 weight percent titanium diboride, said powder having a surface area of between about 3 and 25 square meters per gram and containing less than 0.4 weight percent metal impurities and less than 0.1 weight percent carbon, wherein the nominal

sectional diameter of at least 90 percent of the titanium diboride particles of said power are less than one micron, said particles being tabular to equidimensional hexagonal crystals having well developed faces, and a number median particle size of between about 0.08 and 0.6 microns, said powders being characterized by the property of being able to be cold formed and sintered to a density of at least 90 percent of the theoretical density for titanium diboride.

4,282,196

METHOD OF PREPARING OPTICAL FIBERS OF SILICA

Thomas Y. Kometani, Warren Township, Somerset County, and Darwin L. Wood, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1979, Ser. No. 84,066
Int. Cl.³ C01B *33/12*
U.S. Cl. 423—337 **6 Claims**

1. A method of making an optical fiber by steps comprising oxidizing silicon tetrachloride to form silica, CHARACTERIZED by the additional step of purifying prior to oxidation impure liquid silicon tetrachloride by steps comprising adding water to said impure liquid silicon tetrachloride and separating the gel formed thereby from the remaining silicon tetrachloride, with the amount of the added water being less than 25 weight percent of said impure liquid silicon tetrachloride, and thereafter forming an optical fiber comprising silica produced by the oxidation of said remaining silicon tetrachloride, and

further characterized in that said water is added in sufficient amount so that the concentration of OH-containing impurities in said remaining silicon tetrachloride is approximately 95 parts per million by weight.

4,282,197

DI-IRON TRI-OSMIUM CARBONYL HYDRIDE COMPOUND AND ITS PREPARATION

Sheldon G. Shore, Columbus, Ohio; Jeffrey S. Plotkin, Monsey, and Donna G. Alway, Eggertsville, both of N.Y., assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed May 15, 1980, Ser. No. 150,229
Int. Cl.³ C01G *1/04*
U.S. Cl. 423—417 **13 Claims**

1. A method for making $H_2Fe_2Os_3(CO)_{15}$ which comprises:

(a) establishing a reaction mixture comprising a salt of $[HFe(CO)_4]^{1-}$, $H_2Os_3(CO)_{10}$, and a solvent which solubilizes said $[HFe(CO)_4]^{1-}$ salt to generate an $[HFe(CO)_4]^{1-}$ anion, under conditions substantially free of molecular oxygen and water, and at temperature not substantially above about room temperature; and

(b) adding a protic acid to said reaction mixture to form said $H_2Fe_2Os_3(CO)_{15}$.

4,282,198

PROCESS FOR THE PRODUCTION OF HIGH QUALITY CARBON BLACK

Lothar Rothbühr, Hermülheim; Werner Sroka, Brühl, and Walter Fritz, Stein, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 962,187, Nov. 20, 1978, Pat. No. 4,225,416, which is a division of Ser. No. 735,888, Oct. 26, 1977, Pat. No. 4,154,808. This application Jan. 4, 1980, Ser. No. 109,540
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1975, 2547679
Int. Cl.³ C01B *31/02, 31/00;* C09C *1/48*
U.S. Cl. 423—445 **12 Claims**

1. Carbon black having a high abrasion resistance in rubber compositions prepared by reacting (1) a carbon black forming feedstock prepared by a process consisting essentially of dissolving aromatic pitch in a thin liquid hydrocarbon carbon black feedstock having a viscosity at 100° C. of 5 to 30 cp, there being present suspended matter in the mixture thus formed, mechanically separating suspended matter from the mixture obtained and recovering the pitch containing feedstock having viscosity at 100° C. of 40 to 300 cp with (2) air and (3) a fuel gas.

7. Carbon black having a high abrasion resistance in rubber compositions prepared by reacting (1) a carbon black forming feedstock prepared by a process consisting essentially of mechanically separating suspended matter from a thermally cracked aromatic pitch containing thin liquid hydrocarbon carbon black feedstock having a viscosity at 100° C. of 40 to 300 cp, there being present suspended matter in the mixture thus formed, the feedstock in the absence of the pitch having a viscosity at 100° C. of 5 to 30 cp, and recovering the pitch containing feedstock with (2) air and (3) a fuel gas.

4,282,199

CARBON BLACK PROCESS

Trevor G. Lamond, and Peter Aboytes, both of Borger, Tex., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Feb. 25, 1980, Ser. No. 124,010
Int. Cl.³ C01B *31/02;* C09C *1/48*
U.S. Cl. 423—461 **6 Claims**

1. In a method of using the tail gas generated by the production of carbon black comprising:

(a) producing carbon black and tail gas by the decomposition of a hydrocarbon feedstock;

(b) filtering said tail gas from said carbon black;

(c) dehumidifying said filtered tail gas; and

(d) using said dehumidified tail gas as a fuel in a drying means to dry said carbon black; the improvement comprising heat treating said carbon black in a heat treatment means, wherein said heat treatment means uses as a fuel, a fuel free of sulfur and nitrogen compounds; and wherein said heat treatment means operates at a higher temperature than the drying means.

4,282,200

PROCESSES FOR THE PREPARATION OF FIBEROUS TITANIC ACID METAL SALTS

Yasuo Nishikawa, Okayamashi; Hiroaki Yanagida, Kashiwashi; Tadao Shimizu, Tachikawashi; Masayosi Hori, Narashinoshi, and Tetsuro Yoshida, Okayamashi, all of Japan, assignors to Kyushu Refractories Co., Ltd., Okayama, Japan

Filed Feb. 25, 1980, Ser. No. 124,065
Claims priority, application Japan, Feb. 26, 1979, 54-21563
Int. Cl.³ C01G *23/00*
U.S. Cl. 423—598 **15 Claims**

1. A process for preparing fibrous compounds having a ratio of length to diameter of at least 10 of the formula

$$MO.TiO_2$$

wherein M is a bivalent metal selected from the group consisting of barium, strontium, calcium, magnesium, cobalt, lead, zinc, beryllium, and cadmium which comprises:

reacting a compound selected from the group consisting of fibrous potassium titanate hydrate having a ratio of length to diameter of at least 10 of the formula

$$K_2O.xTiO_2.yH_2O$$

wherein x is 2 to 13 and y is zero to 6 and x and y are not limited to integers and fibrous titanium dioxide hydrate having a ratio of length to diameter of at least 10 of the formula

$$TiO_2.zH_2O$$

wherein z is less than 5 and z is not limited to integers with an aqueous solution of a bivalent metal ion in a closed vessel under hydrothermal conditions for at least 30 minutes.

9. A process for preparing fibrous compounds having a ratio of length to diameter of at least 10 of the formula

$$MO.TiO_2$$

wherein M is a bivalent metal selected from the group consisting of barium, strontium, calcium, magnesium, cobalt, lead, zinc, beryllium, and cadmium which comprises:

reacting a compound selected from the group consisting of fibrous potassium titanate hydrate having a ratio of length to diameter of at least 10 of the formula

$$K_2O.xTiO_2.yH_2O$$

wherein x is 2 to 13 and y is zero to 6 and x and y are not limited to integers and fibrous titanium dioxide hydrate having a ratio of length to diameter of at least 10 of the formula

$$TiO_2.zH_2O$$

wherein z is less than 5 and z is not limited to integers with an aqueous solution containing a bivalent metal ion at ambient atmospheric pressure at a temperature from about room temperature to the boiling point of the aqueous solution for at least 30 minutes and collecting the fibrous intermediate and heating the intermediate at a temperature from about 400° C. to a temperature below the fusing temperature of the intermediate and collecting the fibrous compound.

4,282,201

PHARMACEUTICAL COMPRISING DRUG AND POLYMER

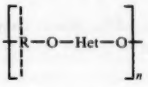
Nam S. Choi, Seoul, Rep. of Korea, assignor to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 8,479, Feb. 2, 1979. This application Nov. 5, 1979, Ser. No. 91,172

Int. Cl.³ A61K *9/22, 9/24, 9/26*

U.S. Cl. 424—14 **5 Claims**

1. A drug delivery device for the administration of drug to a biological drug receptive environment, wherein the device comprises: (I) a shaped matrix sized, structured and adapted for administering drug to the environment and formed of a drug release rate controlling pharmaceutically acceptable material, which material comprises a polymer of the formula:



wherein R is a member selected from the group consisting of divalent, trivalent, and tetravalent radicals consisting of alkylene of 1 to 10 carbons; alkenylene of 2 to 10 carbons; cycloalkylene of 3 to 7 carbons; cycloalkylene 3 to 7 carbons substituted with an alkyl of 1 to 7 carbons, an alkenyl of 2 to 7 carbons, an alkoxy of 1 to 7 carbons, alkylene of 1 to 10 carbons, and alkylene of 2 to 10 carbons; cycloalkenylene of 4 to 7 carbons, cycloalkylene of 4 to 7 carbons substituted with an alkyl of 1 to 7 carbons, alkenyl of 2 to 7 carbons, alkoxy of 1 to 7 carbons, alkylene of 1 to 10 carbons and alkenylene of 2 to 10 carbons; arylene of 6 to 16 carbons; arylene of 6 to 16 carbons substituted with an alkyl of 1 to 7 carbons, alkenyl of 2 to 7 carbons, alkoxy of 1 to 7 carbons, alkylene of 1 to 10 carbons and alkenylene of 2 to 10 carbons; and Het is a heterocyclic five to eight membered ring comprising: (1) a carbon atom bivalently bonded to the oxygen atoms of the polymer; (2) a hetero ring atom adjacent to the carbon atom of the polymer chain, said hetero atom selected from the group consisting of nitrogen, sulfur and oxygen; and (3) with the remainder of the ring independently selected from (a) and (b) wherein (a) is an alkylene bridge of 2 to 5 carbons substituted with a ring atom selected from the group consisting of nitrogen and sulfur; and (b) is an alkylene bridge of 3 to 6 carbons when said hetero atom adjacent to the carbon atom of the polymer chain is a hetero ring atom selected from the group consisting of nitrogen and sulfur; and n is greater than 10; (II) a drug selected from the group consisting of locally and systemically acting physiologically and pharmaceutically acceptable drug present in the matrix; and (III) wherein the device when in operation administers a therapeutically effective amount of drug to the environment over a period of time.

4,282,202

INTRAMAMMARY COMPOSITIONS

John S. Dowrick, Littlehampton, England, assignor to Beecham Group Limited, England

Filed Oct. 29, 1979, Ser. No. 88,859

Claims priority, application United Kingdom, Oct. 27, 1978, 42336/78

Int. Cl.³ A61K *9/06, 9/08, 9/10, 9/18*

U.S. Cl. 424—23 **5 Claims**

1. A liquid veterinary composition adapted for intramammary administration comprising a suspension of a powered solid pharmaceutically acceptable alkali metal, alkaline earth metal or amine salt of clavulanic acid in an amount of from 1 to 40% by weight of said composition calculated on the basis of the equivalent weight of free clavulanic acid, and from 5 to 20% by weight of a powdered solid molecular sieve in a pharmaceutically acceptable oil carrier.

4,282,203

HAIR LACQUER AND HAIR LOTION COMPOSITIONS CONTAINING A COPOLYMER HAVING UNITS OF A VINYL ALLYL OR METHALLY ESTER OF AN α- OR β-CYCLIC CARBOXYLIC ACID

Bernard Jacquet, Antony; Christos Papantoniou, Montmorency; Guy Vanlerberghe, Montjay la Tour; Claude Mahieu, Paris, and Vahan Zorayan, Enghien-les-Bains, all of France, assignors to L'Oreal, Paris, France

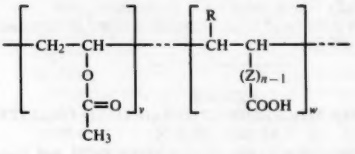
Filed Oct. 16, 1979, Ser. No. 85,398

Claims priority, application France, Oct. 27, 1978, 78 30596

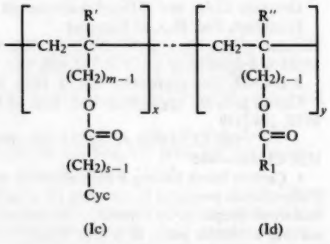
Int. Cl.³ A61K *7/11*

U.S. Cl. 424—47 **15 Claims**

1. A cosmetic composition for treating the hair comprising a cosmetically acceptable vehicle and at least one copolymer having the formula:



(Ia) (Ib)



(Ic) (Id)

wherein:

m, n, s and t are 1 or 2,

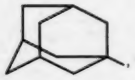
R, R′ and R″ each independently represent hydrogen or methyl,

Z represents a divalent radical selected from the group consisting of $-CH_2-$, $-CH_2-O-CH_2-$ and $-CH_2-O-(CH_2)_2-$,

R_1 represents linear or branched alkyl or alkenyl, having 2–21 carbon atoms,

when s=1, Cyc represents a saturated or unsaturated mono- or poly-cyclic radical selected from the group consisting of:

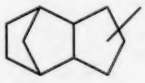
(i) a radical of the formula



(ii) a radical of the formula

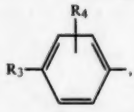
wherein R_2 is hydrogen or methyl and p is 1 or 2,

(iii) a radical of the formula



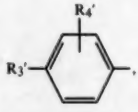
and

(iv) a radical of the formula



wherein R_3 represents hydrogen, methyl, ethyl, tert.-butyl, ethoxy, butoxy or dodecoxy and R_4 represents hydrogen, alkyl having 1–4 carbon atoms or alkoxy having 1–4 carbon atoms,

when s=2, Cyc represents a radical of the formula



wherein R'_3 and R'_4 have the same meanings given for R_3 and R_4, respectively,

v represents from 10 to 91 weight percent,

w represents from 3 to 20 weight percent,

x represents from 4 to 60 weight percent, and

y represents from 0 to 40 weight percent, with the sum v+w+x+y being equal to 100 weight percent.

5. The composition of claim **1** wherein said vehicle is an alcohol in admixture with a propellant, said composition is packaged in an aerosol container and the said copolymer is present in an amount of 0.7 to 8 weight percent.

4,282,204

ANTI-CARIES PREPARATIONS

Glyn O. Phillips, Clwyd, Wales; Alan N. Hall, Salford, England, and Stephen D. Hogg, Liverpool, England, assignors to Nicholas Proprietary Limited, Victoria, Australia

Filed May 30, 1979, Ser. No. 43,626

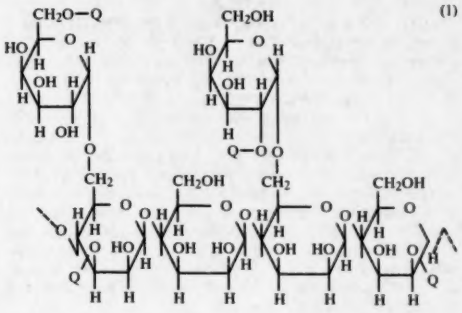
Claims priority, application United Kingdom, May 31, 1978, 25870/78

Int. Cl.[3] **A61K** *7/16, 31/70*

U.S. Cl. 424—49 **4 Claims**

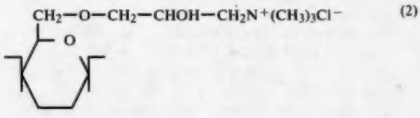
1. A method of inhibiting dental caries which comprises: administering to teeth a non-toxic polysaccharide selected from the group consisting of

DEAE-cellulose, the quaternary ammonium derivative of guar gum having the repeating unit of the formula (1)



(1)

wherein Q represents a quaternary ammonium group, and cationic maize starch having a degree of substitution of 0.034–0.042



(2)

in a dental caries inhibiting amount of at least 0.1 percent w/v of mouth liquids.

4,282,205

2,4,6-TRIMETHYLCYCLOHEXANEMETHANOL AND DERIVATIVES, PROCESS FOR PREPARING SAME AND ORGANOLEPTIC USES THEREOF

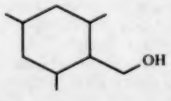
Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 82,076, Oct. 5, 1979, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Nov. 20, 1980, Ser. No. 208,508

Int. Cl.[3] **A61K** *7/16*

U.S. Cl. 424—49 **1 Claim**

1. A process for augmenting or enhancing the taste of toothpastes comprising the step of adding to toothpaste from 0.05 parts per million up to 500 parts per million based on total weight of the composition of 2,4,6-trimethylcyclohexanemethanol having the structure:



4,282,206

METHOD OF PROTECTING HUMAN SKIN FROM ULTRAVIOLET RADIATION

Paul L. Warner, Jr., Clarence, and F. Christopher Zusi, Williamsville, both of N.Y., assignors to Westwood Pharmaceuticals Inc., Buffalo, N.Y.

Filed Nov. 15, 1979, Ser. No. 94,419
Int. Cl.[3] A61K *7/42*
U.S. Cl. 424—59 2 Claims

1. A method for protecting human skin from ultraviolet radiation comprising applying to the skin to be protected an effective ultraviolet radiation-absorbing amount of 1-(4-aminophenyl)-2-morpholinylethanone in a vehicle suitable for topical administration.

4,282,207

ADHERENT CONTROLLED RELEASE PESTICIDES

Robert W. Young, New York, N.Y.; Samuel Prussin, Big Sur, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,633
Int. Cl.[3] A01N *25/24*
U.S. Cl. 424—78 10 Claims

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of an insecticide, consisting essentially of (a) a carbinol-containing organic polymer, (b) a crosslinking agent for said polymer comprising a hydrolyzable silane selected from the group consisting of (1) a hydrocarbon substituted hydrolyzable silane, (2) an organopolysiloxane containing hydrolyzable silane groups, and (3) a partial hydrolyzate of (1) and/or (2), and (c) a pesticide.

4,282,208

ADHERENT CONTROLLED RELEASE PESTICIDES

Robert W. Young, New York, N.Y.; Samuel Prussin, Big Sur, Calif., and Norman G. Gaylord, New Providence, N.J., assignors to Young, Prussin, MGK, J.V., New York, N.Y.

Filed Nov. 8, 1979, Ser. No. 92,634
Int. Cl.[3] A01N *25/24*
U.S. Cl. 424—78 6 Claims

1. A composition capable of undergoing hydrolysis under ambient conditions to form a polymeric network capable of controlling the release of an insecticide, consisting essentially of (a) a carbinol-containing organic polymer, (b) a crosslinking agent for said polymer comprising a hydrolyzable titanium compound or a partial hydrolyzate thereof, said titanium compound being selected from the group consisting of tetraesters, tetraanhydrides, tetraamides and chelates of glycols, hydroxy acids, dicarboxylic acids, diketones, ketoesters and alkanolamines, and (c) a pesticide.

4,282,209

PROCESS FOR PREPARING INSECTICIDAL COMPOSITIONS

Stanley Tocker, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 892,396, Mar. 31, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,331
Int. Cl.[3] A61K *31/78;* A01N *33/24, 37/00, 47/10*
U.S. Cl. 424—81 7 Claims

1. A process for preparing controlled release particles of methomyl which comprises:

(a) dissolving a water-insoluble polymer and methomyl in an organic solvent, the concentration of methomyl in the resulting solution being about 1–50% by weight and the concentration of said polymer in the resulting solution being about 1–60% by weight;

(b) comingling, with high shear agitation, said methomyl-polymer solution with a nonsolvent for both methomyl and said polymer, to produce particles of polymer embedded with methomyl;

(c) and recovering said particles; wherein

(i) said organic sovlent is miscible with said nonsolvent, and

(ii) said polymer is poly(methylmethacrylate), poly(ethylmethacrylate), methylmethacrylate or ethylmethacrylate or styrene copolymers with polar monomers, ethyl cellulose, cellulose acetate, cellulose acetatebutyrate, polystyrene, polyvinyl chloride or vinyl chloride-vinyl acetate copolymers.

4,282,210

METHOD FOR THE CONTROL OF SHIPPING FEVER PNEUMONIA IN CATTLE

Michael R. Irwin, New City, N.Y., assignor to American Cyanamid Co., Stamford, Conn.

Filed Dec. 20, 1979, Ser. No. 105,687
Int. Cl.[3] A61K *39/12*
U.S. Cl. 424—89 5 Claims

1. A method for the control of shipping fever in cattle comprising parenterally administering to said animals from 2 mg/kg of body weight to 8 mg/kg of body weight of a pharmaceutically acceptable salt of a compound selected from the group consisting of dl 6-phenyl-2,3,5,6-tetrahydroimidazo-[2,1-b]thiazole and l(−)6-phenyl-2,3,5,6-tetrahydroimidazo-[2,1-b]thiazole and, the same day or within 21 days thereafter, parenterally administering to said cattle an immunizing or prophylactically effective amount of an infectious bovine rhinotracheitis virus vaccine.

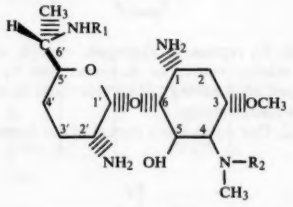
4,282,211

1-EPI-2-DEOXYFORTIMICIN B AND DERIVATIVES

James B. McAlpine, Libertyville, and Ronald E. Carney, Gurnee, both of Ill., assignors to Abbott Laboratories, Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,146
Int. Cl.[3] A61K *31/71;* C07H *15/22*
U.S. Cl. 424—180 14 Claims

1. A 1-epi-fortimicin represented by the formula



wherein: R_1 is hydrogen or loweralkyl; and R_2 is selected from the group consisting of loweralkyl, aminoloweralkyl, diaminoloweralkyl, N-loweralkylaminoloweralkyl, N,N-diloweralkylaminoloweralkyl, hydroxyloweralkyl, N-loweralkylaminohydroxyloweralkyl, N,N-diloweralkylaminohydroxyloweralkyl, acyl, aminoacyl, diaminoacyl, hydroxyacyl, hydroxy-substituted aminoacyl, N-loweralkylaminoacyl, N,N-diloweralkylaminoacyl, hydroxy-substituted-N-loweralkylaminoacyl and hydroxy-substituted N,N-diloweralkylaminoacyl; with the limitation that R_2 cannot be glycyl, formylglycyl or hydantoyl; and the pharmaceutically acceptable salts thereof.

12. A pharmaceutical composition comprising an anti-bacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier or diluent.

4,282,212

IMMUNE-STIMULATING 1-(N-ACYLCARBAMOYL)-2-CYANOAZIRIDINES

Herbert Berger, Mannheim-Käfertal; Rudi Gall, Hirschberg-Grossachsen; Wolfgang Kampe, Heddesheim; Uwe Bicker, Mannheim, and Gottfried Hebold, Mannheim-Vogelstang, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

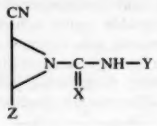
Filed Sep. 30, 1977, Ser. No. 838,426

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644820; Jun. 18, 1977, 2727550

Int. Cl.[3] **C07D** *203/20;* **A61K** *31/395;* **C07F** *9/22, 9/24*

U.S. Cl. 424—200 **11 Claims**

1. Claim (once amended) A 1-(N-acyl-carbamoyl)-2-cyano-aziridine of the formula



wherein

X is oxygen or sulphur,

Z is hydrogen, alkyl containing up to 4 carbon atoms, and

Y is a —CO—R_1, —SO_2—R_2, —S—R_3 or

R_1 is

(a) hydrogen, nitrile, lower alkoxy, alkoxycarbonyl, N,N-dialkylaminocarbonyl, lower N-alkyl-N-phenyl or N,N-dialkylamino,

(b) aliphatic hydrocarbon saturated or unsaturated optionally substituted once or twice by

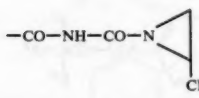
(i) halogen, nitrile, lower N-alkanoylamino, N-N-dialkylamino, alkoxy, alkoxycarbonyl, alkanoyloxy, benzoyloxy, alkylsulphonyloxy, arysulphonyloxy, N,N-dialkylaminocarbonyloxy, alkylsulphonyl or alkylthio,

(ii) phenyl, naphthyl, phenylthio or phenoxy optionally substituted once or twice by halogen, nitro, phenyl, lower alkyl, alkoxy or alkylthio,

(iii) dialkoxyphosphoryloxy or dialkoxyphosphono,

(iv) cycloalkyl, or

(v)



(c) phenyl, phenoxy or optionally hydrogenated naphthyl optionally substituted once or twice by halogen, trifluoromethyl, sulphamoyl, nitro, nitrile, phenyl, lower alkyl, alkylthio, alkylsulphonyl, alkoxy, alkoxycarbonyl, alkoxycarbonylalkyl, N,N-dialkylamino, N,N-dialkylaminocarbonyl, alkanoyl, alkanoyloxy, alkanoyloxyalkyl or methylenedioxy,

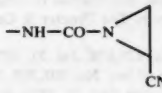
R_2 is

(a) a lower aliphatic hydrocarbon radical optionally substituted by halogen, lower alkoxycarbonyl or alkanoyloxy,

(b) cycloalkyl, amino or lower dialkylamino,

(c) phenyl optionally substituted by lower alkyl, lower alkoxy, halogen or nitro, or

(d)



R_3 is

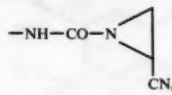
(a) lower alkyl on trifluoromethyl, or

(b) phenyl optionally substituted by lower alkyl, halogen or nitro, and

R_4 and R_5 each independently is

(a) lower alkyl or alkoxy,

(b)



or

R_4 and R_5 together are alkylenedioxy containing up to 4 carbon atoms, or

a pharmacologically compatible salt thereof with a base, when present alkyl having up to 6 carbon atoms, the hydrocarbon substituents containing up to 12 carbon atoms, and cycloalkyl having 3 to 8 ring carbon atoms.

9. An immune-stimulating composition of matter comprising an immune-stimulating effective amount of a compound or salt according to claim **1** in combination with a pharmacologically compatible diluent.

4,282,213

AMIDINO AND GUANIDINO PHOSPHONATES

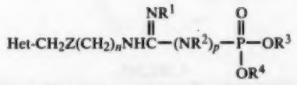
Graham J. Durant, Welwyn Garden City; Rodney C. Young, Bengeo, both of England, and Zev Tashma, Jerusalem, Israel, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 913,180, Jun. 6, 1978, Pat. No. 4,190,664. This application Aug. 27, 1979, Ser. No. 70,208

Int. Cl.[3] **C07F** *9/58, 9/65;* **A61K** *31/675*

U.S. Cl. 424—200 **10 Claims**

1. A compound of the structure



in which

Het is a 5- or 6-membered fully unsaturated heterocycle containing at least one nitrogen atom, said heterocycle being pyridine or triazole which is attached at a ring carbon, and optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy or lower alkoxy;

Z is sulphur or methylene;

n is 2 or 3,

R^1 is hydrogen, lower alkyl or Het—$CH_2Z(CH_2)_n$—;

p is 0 or 1;

R^2 is hydrogen or lower alkyl;

or R^1 and R^2 together form a $(CH_2)_2$ or $(CH_2)_3$ group;

R^3 is lower alkyl, phenyl or phenyl(lower alkyl); and

R^4 is hydrogen when p is 0 and hydrogen, lower alkyl, phenyl or phenyl(lower alkyl) when p is 1.

4,282,214
PHENYLACETATE ANTI-INFLAMMATORY COMPOSITION

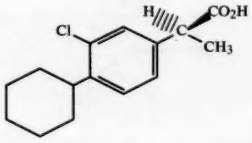
Lawrence Flora, Hamilton, and Marion D. Francis, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 929,476, Jul. 31, 1978, abandoned, which is a continuation of Ser. No. 801,705, May 31, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 86,849

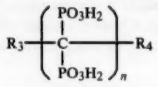
Int. Cl.[3] A61K *31/19, 31/66, 31/195*

U.S. Cl. 424—204 **19 Claims**

1. An anti-inflammatory composition, comprising: (1) from about 10 mg to about 500 mg of a phenylacetic acid-based compound selected from the group consisting of fenoprofen, ketoprofen, MK-830 having the formula



and pharmaceutically-acceptable salts and esters thereof; and (2) from about 50 mg. to about 250 mg. of an organophosphonate compound selected from the group consisting of geminal organophosphonates of the formula



or pharmaceutically acceptable salts thereof, wherein n is an integer from 1 to about 10; R_3 is selected from the group consisting of H, $—CH_2OH$, $C_1–C_{20}$ alkyl or cycloalkyl, $C_2–C_{20}$ alkenyl, aryl, phenylethyl, benzyl, halogen, amino, substituted amino, $—CH_2COOH$, $—CH_2PO_3H_2$, $—CH(PO_3H_2)(OH)$ or $—CH_2CH(PO_3H_2)_2$; and R_4 is selected from the group consisting of H, lower alkyl, amino, benzyl, halogen, —OH, $—CH_2COOH$, $—CH_2PO_3H_2$ or $—CH_2CH_2PO_3H_2$.

4,282,215
ANALGESIC MIXTURE OF NALBUPHINE AND ACETYLSALICYLIC ACID, DERIVATIVE OR SALT THEREOF

John R. Dudzinski, East Northport, N.Y., and William K. Schmidt, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 160,437, Jun. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 69,083, Aug. 23, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 170,931

Int. Cl.[3] A61K *31/625*

U.S. Cl. 424—232 **24 Claims**

1. A pharmaceutical composition consisting essentially of (a) nalbuphine or a pharmaceutically suitable acid addition salt thereof and (b) acetylsalicylic acid, sodium acetylsalicylate, calcium acetylsalicylate, salicylic acid, or sodium salicylate or any combination thereof in a weight ratio of (a) to (b) of from about 1:1.76 to about 1:61.7.

4,282,216
TOPICAL ANTI-INFLAMMATORY DRUG THERAPY

D. Thomas Rovee, Bridgewater; John R. Marvel, and James A. Mezick, both of East Brunswick, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 788,453, Apr. 20, 1977, Pat. No. 4,185,100, which is a continuation-in-part of Ser. No. 685,942, May 13, 1976, abandoned. This application Aug. 6, 1979, Ser. No. 64,311

Int. Cl.[3] A61K *31/15, 31/19, 31/40, 31/56*

U.S. Cl. 424—240 **13 Claims**

1. A method of topical treatment of an inflammatory condition of the skin comprising applying to the affected area a non-steroidal anti-inflammatory agent which is an inhibitor of prostaglandin synthetase selected from the group consisting of the tolmetin and ethyl 5-p-chlorobenzoyl-1,4-dimethylpyrrole-2-acetate and, concurrently therewith, a topically active anti-inflammatory corticosteroid, each of said prostaglandin synthetase inhibitor and said corticosteroid being applied in a pharmaceutically acceptable topical vehicle selected from the group consisting of creams, gels, ointments, powders, aerosols and solutions suitable for topical administration, the amounts of said anti-inflammatory drugs being sufficient, in combination, to combat said inflammatory condition.

4,282,217
PHARMACEUTICAL COMPOSITIONS CONTAINING A CORTICOSTEROID SUBSTANCE

Alessandro Baglioni, Monza, and Giancarlo Sportoletti, Milan, both of Italy, assignors to Italfarmaco S.p.A., Milan, Italy

Filed Jun. 25, 1980, Ser. No. 162,686

Claims priority, application Italy, Dec. 28, 1979, 28417 A/79

Int. Cl.[3] A61K *31/56*

U.S. Cl. 424—240 **4 Claims**

1. A pharmaceutical composition consisting essentially of a salt of 6-α-methyl-prednisolone-21-hemisuccinate and a L-arginine ester in the form of the hydrochloride salt.

4,282,218
AMIDES

Alasdair T. Glen, and Richard W. Bayles, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

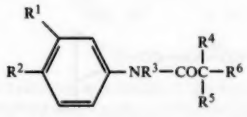
Continuation of Ser. No. 950,142, Oct. 10, 1978, Pat. No. 4,239,776. This application Jun. 27, 1980, Ser. No. 163,483

Claims priority, application United Kingdom, Oct. 12, 1977, 42454/77

Int. Cl.[3] A61K *31/56, 31/275*

U.S. Cl. 424—240 **4 Claims**

1. A pharmaceutical or veterinary composition having antiandrogenic properties which comprises an effective amount of an acylanilide of the formula:



wherein R^1 is cyano, nitro, trifluoromethyl or iodo, or has the formula $—CONR^{11}R^{12}$, and wherein R^2 is cyano, nitro, trifluoromethyl, chloro, bromo or iodo, or has the formula $—CONR^{11}R^{12}$, wherein R^{11} and R^{12}, which may be the same or different, each is hydrogen or alkyl of up to 4 carbon atoms; wherein R^3 is hydrogen or alkyl of up to 4 carbon atoms; wherein either R^4 and R^5, which may be the same or different, each is alkyl of up to 4 carbon atoms; or R^4 and R^5 are joined together with the adjacent carbon atom to form cycloalkyl of 3 or 4 carbon atoms; and wherein R^6 is hydrogen, hydroxy, halogen, alkyl, hydroxyalkyl or alkoxy each of up to 4 carbon atoms, or acyloxy of up to 15 carbon atoms, provided that at least one or R^1 and R^2 is cyano, in association with a pharma-

ceutically acceptable diluent or carrier and which additionally contains one or more drugs selected from antioestrogens, progestins, inhibitors of gonadotrophic secretion, cytotoxic agents, antibiotics and anti-inflammatory agents.

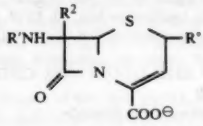
4,282,219

7-N-HETEROCYCLYL CEPHALOSPORINS AND ANTIBIOTIC PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

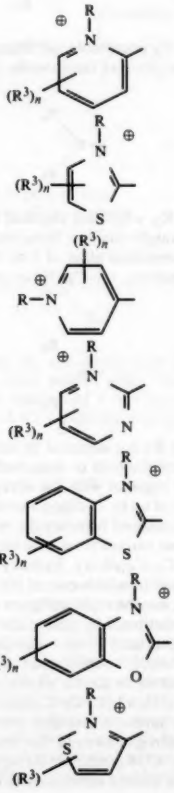
John Hannah, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 1, 1979, Ser. No. 62,827
Int. Cl.[3] A61K *31/545;* **C07D** *501/14*
U.S. Cl. 424—246 **6 Claims**

1. A compound having the structural formula:



and the pharmaceutically acceptable salts and esters thereof wherein: R° is hydrogen or methyl;
R^2 is hydrogen or methoxyl;
R′ is selected from the group consisting of:



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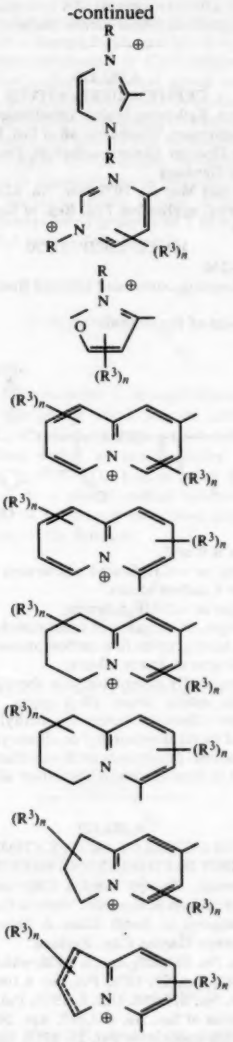


wherein the dotted line indicates both saturated and unsaturated rings; and
wherein:
R is alkyl having from 1–6 carbon atoms, substituted alkyl having from 1–6 carbon atoms wherein the substituent is chloro, fluoro, hydroxyl, alkoxyl (C_{1-6}), carboxyl, amino, sulfo and mono- and dialkylamino wherein each alkyl has 1–6 carbon atoms substituted and unsubstituted phenylalkyl and phenylalkenyl having 7–12 carbon atoms wherein the substituent is selected from chloro, fluoro, carboxyl, amino, cyano, hydroxyl and sulfo;
R^3 is chloro, fluoro, hydroxyl, carboxyl, sulfo, cyano, amino, mono- and dialkylamino, alkoxyl, alkyl having from 1–6 carbon atoms, substituted alkyl having 1–6 carbon atoms wherein the substituent is carboxyl, cyano, alkoxyl having 1–6 carbon atoms, phenyl and phenyloxy;
n is an integer selected from 0 to 3.

6. An antibiotic pharmaceutical composition comprising a

therapeutically effective amount of a compound according to claim 1 and a pharmaceutical carrier therefor.

4,282,220

CEPHEM DERIVATIVES

Dieter Bormann, Kelkheim; Walter Dürckheimer, Hattersheim, and Elmar Schrinner, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,066

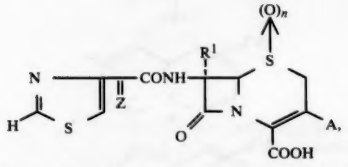
Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822860

Int. Cl.³ C07D *501/20*

U.S. Cl. 424—246 **7 Claims**

1. A cephalosporin compound selected from the group consisting of

(a) compounds of the formula



wherein n is 0 or 1,

A is methyl or $—CH_2O$-acyl where acyl is alkanoyl having 1 to 5 carbon atoms,

Z is oxygen or =NOR wherein

R is hydrogen or saturated or unsaturated aliphatic hydrocarbon having up to five carbon atoms, and

R^1 is hydrogen or lower alkoxy;

(b) pharmaceutically acceptable salts thereof; and

(c) phthalide esters, lower alkyl esters, and substituted methyl esters thereof wherein the methyl group is monosubstituted by trichloromethyl or alkanoyloxy having 2 to 5 carbon atoms, or is mono- or di-substituted by phenyl or by phenyl in turn substituted by lower alkoxy or nitro.

4,282,221

PHARMACOLOGICALLY ACTIVE COMPOUNDS TO INHIBIT H-2 HISTAMINE RECEPTORS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

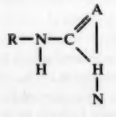
Division of Ser. No. 893,859, Apr. 6, 1978, which is a division of Ser. No. 736,662, Oct. 29, 1976, Pat. No. 4,104,381, which is a division of Ser. No. 619,985, Oct. 6, 1975, Pat. No. 4,005,205, which is a division of Ser. No. 463,647, Apr. 24, 1974, Pat. No. 3,932,644. This application Jul. 25, 1979, Ser. No. 60,324

Claims priority, application United Kingdom, May 3, 1973, 21063/73; Jul. 2, 1973, 35551/73

Int. Cl.³ A61K *31/47, 31/53, 31/54, 31/415*

U.S. Cl. 424—249 **5 Claims**

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A taken together with the nitrogen and carbon atoms shown forms a 1,2,4-triazin-2H-5-one or 6-methyl-1,2,4-triazin-2H-5-one ring; R is a grouping of the formula:

$$Het—CH_2Z(CH_2)_n—$$

wherein Het is an imidazole ring, said ring being optionally substituted by lower alkyl; Z is sulphur or a methylene group and n is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

4,282,222

3-PIPERIDINO OR APIPERAZINO-1-PHENYL OR 1-SUBSTITUTED PHENYL ISOQUINOLINE AND ANTIDEPRESSANT COMPOSITIONS THEREOF

Wilhelm Bartmann; Elmar Konz, both of Bad Soden am Taunus, Fed. Rep. of Germany, and Harry M. Geyer, Somerville, N.J., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

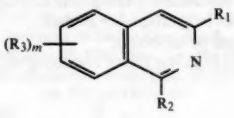
Continuation-in-part of Ser. No. 033,325, Apr. 25, 1979, abandoned. This application Sep. 12, 1979, Ser. No. 75,038

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818403

Int. Cl.³ A61K *31/47, 31/495;* **C07D** *401/04*

U.S. Cl. 424—250 **5 Claims**

1. An isoquinoline of the formula



or a physiologically acceptable salt thereof in which m is 1 or 2, R_1 is an amino group of the formula

in which R_4 and R_5, which are identical or different, stand for hydrogen or a straight-chain or branched alkyl of from 1 to 8 carbon atoms, substituted alkyl of 1 to 8 carbon atoms being substituted by hydroxy, C_1–C_4-alkoxy or an amino group of the formula

in which R_6 and R_7 are identical or different and represent hydrogen or a straightchain or branched alkyl of from 1 to 6 carbon atoms, or together with the nitrogen atom represent a heterocyclic ring of up to 7 carbon atoms; R_4 and R_5 may also from a 5- to 8-membered heterocyclic ring together with the nitrogen atom, one carbon atom of which may be substituted by C_1–C_6-alkyl, C_1–C_4-alkoxy, hydroxy, carboxy, or C_1–C_4-alkoxycarbonyl and in which one of the carbon atoms of the heterocyclic ring may be replaced by an oxygen, sulfur, nitrogen or nitrogen substituted by thienyl, furyl, pyridyl or formyl, C_3–C_8-alkenyloxycarbonyl or C_3–C_8-alkinyloxycarbonyl, C_1–C_6-alkoxycarbonyl, substituted C_1–C_6-alkoxycarbonyl substituted by hydroxy or C_1–C_4-alkoxy, phenyl substituted by one or more C_1–C_4-alkyl, C_1–C_4-alkoxy, methylenedioxy, hydroxy, nitro or amino, or halogen, and in which the hydrogen atom at the nitrogen atom in the heterocycle may further be (a) replaced by $-COR_8$, wherein R_8 represents thienyl, furyl, pyridyl, phenyl or phenyl substituted as defined above, or (b)

replaced by C_1–C_6-alkyl substituted in turn by hydroxy, C_1–C_4-alkoxy, C_1–C_6-dialkyl-amino, ethylenedioxy, trimethylenedioxy or a phenyl radical; R_2 is a pyridyl; thienyl; phenyl or phenyl mono-or disubstituted by halogen, hydroxy, nitro, amino or amino substituted by one or two aliphatic, cycloaliphatic or aromatic hydrocarbon radicals and having from 2 to 18 carbon atoms, by acylamino, by alkyl or by alkoxy, with 1 to 6 carbon atoms each, by benzyloxy or by trifluoromethyl; R_3 is hydrogen, halogen, hydroxy, alkyl or alkoxy with 1 to 6 carbon atoms, nitro, amino, benzyloxy, methylene-dioxy or ethylene-dioxy.

3. Antidepressant composition comprising an effective amount of a compound as defined in claim 1 and physiologically acceptable auxiliary agent or carrier thereof.

4,282,223

ISOQUINOLINE DERIVATIVES, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE FOR THE MANUFACTURE OF MEDICAMENTS

Wilhelm Bartmann; Elmar Konz, both of Bad Soden am Taunus; Hansjörg Kruse, Kelkheim, all of Fed. Rep. of Germany, and Harry M. Geyer, Flemington, N.J., assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

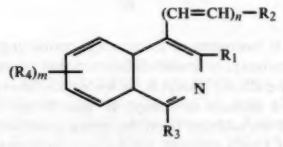
Continuation-in-part of Ser. No. 20,411, Mar. 14, 1979, abandoned. This application Sep. 19, 1979, Ser. No. 76,862

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811312

Int. Cl.[3] **A61K** *31/47, 31/495;* **C07D** *401/04*

U.S. Cl. 424—250 **14 Claims**

1. An isoquinoline compound of the formula I



in which

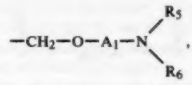
m is one or two, n is zero or one,

R_1 is an amino group of the formula

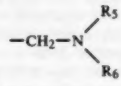
in which R_5 and R_6 are identical or different and are hydrogen or an alkyl radical with 1 to 8 carbon atoms, substituted alkyl radicals of 1 to 8 carbon atoms substituted by hydroxyl, C_1–C_4-alkoxy or an amino group of the formula

in which R_7 and R_8 are identical or different and represent hydrogen or a straight-chain or branched alkyl radical with 1 to 6 carbon atoms, or together with the nitrogen atom represent a heterocyclic ring with up to 7 carbon atoms, and wherein the alkyl radicals R_5 and R_6, when taken together with the nitrogen atom, define a 5-membered to 8-membered ring, and a substituted heterocyclic ring thereof on one of the carbon atoms with the substituents being a C_1–C_6-alkyl, C_1–C_4-alkoxy, hydroxyl, carboxyl or C_1–C_4-alkoxycarbonyl group, and in said ring one of said carbon atoms may further be replaced by an oxygen, sulfur, a nitrogen atom with a hydrogen atom thereon, or wherein the hydrogen atom on the nitrogen is replaced with a thienyl, furyl, pyridyl, or formyl group, a C_3–C_8-alkenyloxycarbonyl or C_3–C_8-alkynloxycarbonyl group, a C_1–C_6-alkoxy carbonyl group and substituted alkoxy carbonyl group substituted by hydroxy or C_1–C_4-alkoxy groups or a phenyl radical, or a substituted phenyl radical, wherein said phenyl may be substituted by up to three C_1–C_4-alkyl, C_1–C_4-alkoxy, mehtylenedioxy, hydroxyl, nitro or amino groups or halogen;

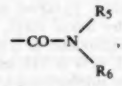
R_2 denotes a carboxyl, cyano, formyl or hydroxymethyl group, an alkoxymethyl group with 1 to 6 carbon atoms, an aminoalkyl group of the formula



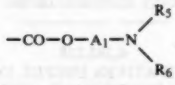
in which A_1 represents a straight-chain or branched C_2–C_6-alkylene group, which may be substituted by hydroxyl or C_1–C_4-alkoxy groups, and in which R_5 and R_6 are as defined above, an acyloxymethyl group of the formula $—CH_2—O—CO—R_{10}$, in which R_{10} is a C_1–C_6-alkyl radical or a phenyl radical wherein said phenyl radicals may be substituted as defined above, an aminomethyl group of the formula



in which R_5 and R_6 are as defined above, a carboxamide group of the formula



in which R_5 and R_6 are as defined above, or a carboxylic acid ester group of the formula



in which A_1, R_5 and R_6 are as defined above;

R_3 denotes a phenyl radical or a substituted phenyl group, monosubstituted or disubstituted with halogen, hydroxyl, nitro, amino or a substituted amino group with two to eighteen carbon atoms, a substituted amino group wherein the same is substituted by one or two aliphatic, cycloaliphatic or aromatic hydrocarbon radicals and in which the nitrogen atom may be incorporated in a heterocyclic ring, or an acylamino, alkyl or alkoxy group, each with one to six carbon atoms, a benzyloxy group of a trifluoromethyl group, or wherein R_3 denotes a pyridyl or thienyl radical; and

R_4 denotes hydrogen, halogen, hydroxyl, an alkyl or alkoxy group with one to six carbon atoms, or a nitro, amino, benzyloxy or methylenedioxy or ethylenedioxy group and;

a physiologically acceptable salt thereof.

12. An antidepressant composition which comprise an effective amount of a compound defined in claim 1 and a physiologically acceptable carrier therefor.

4,282,224

ALKOXY-PYRIDYL SUBSTITUTED ALKANES

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City, and George S. Sach, Welwyn, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

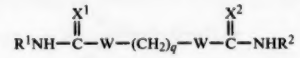
Division of Ser. No. 948,616, Oct. 4, 1978, Pat. No. 4,219,553, which is a division of Ser. No. 816,420, Jul. 18, 1977, Pat. No. 4,139,624. This application Jan. 16, 1980, Ser. No. 112,486

Claims priority, application United Kingdom, Jul. 28, 1926, 31392/76

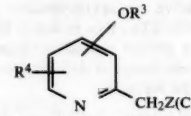
Int. Cl.[3] C07D *401/12;* A61K *31/50, 31/505, 31/495*

U.S. Cl. 424—250 8 Claims

1. A compound of the formula



wherein X^1 and X^2, which may be the dsame or different, are each $CHNO_2$ or NY where Y is hydrogen, hydroxy, lower alkyl, cyano or $CONH_2$; R^1 is a grouping of the structure



wherein R^3 is lower alkyl or $—(CH_2)_pA$ where p is 2 to 4, and A is hydroxy, lower alkoxy or dimethylamino; R^4 is hydrogen, lower alkyl, lower alkoxy, amino, halogen ormethylamino; or $—OR^3$ and R^4 can together form a $—O(CH_2)_bO$-group attached to adjacent carbon atoms on the pyridine ring; where b is 1 to 4; Z is sulphur or methylene; n is 2 or 3; R^2 is a grouping of the structure:

$$Het—(CH_2)_{2}Z'(Ch_2)_{n'}—$$

wherein Het is pyrimidine, pyrazine or pyridazine which is optionally substituted by lower alkyl, hydroxy, halogen or amino; Z' is sulphur or methylene; m' is 0, 1 or 2; n' is 2 or 3 and the sum of m' and n' is 3, 4; W is NH, and when X^1 and X^2 are both NH, W may also be sulphur; and q is an integer from 2 to 8 or a pharmaceutically acceptable acid addition salt thereof.

2. A pharmaceutical composition to inhibit H-2 histamine receptors comprising, in an effective amount to inhibit said receptors, a compound according to claim **1** in combination with a pharamceutically acceptable carrier.

4,282,225

THIAZOLE DERIVATIVES USEFUL IN THERAPY AS ANTI-DEPRESSANT AGENTS

Dennis C. H. Bigg, Jouy en Josas, France, assignor to Synthelabo, Paris, France

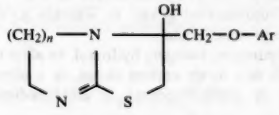
Filed Feb. 4, 1980, Ser. No. 117,990

Claims priority, application France, Feb. 12, 1979, 79 03431

Int. Cl.[3] C07D *277/60, 239/00, 277/00;* A61K *31/425, 31/505*

U.S. Cl. 424—251 6 Claims

1. Thiazole derivatives, in the form of racemates or optically active isomers, of the formula



(I)

in which n is 1 or 2 and Ar represents phenyl which is unsubstituted or substituted by one or more substituents which are the same or different, selected from the group consisting of halogen, CF_3, phenyl, straight or branched chain alkyl of 1 to 4 carbon atoms, and cyclohexyl of 3 to 6 carbon atoms, and their pharmaceutically acceptable acid addition salts.

4,282,226

THIOXOPYRAZOLO[1,5-C]QUINAZOLINE DERIVATIVES, ANTI-ALLERGIC COMPOSITIONS AND METHODS FOR TREATING ALLERGIC CONDITIONS BY PARENTERAL ADMINISTRATION, AEROSOL OR INSUFFLATION

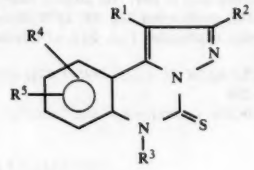
B. Richard Vogt, Yardley, Pa., and Ligaya G. Magbanua, Allentown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 900,050, Apr. 26, 1978, abandoned. This application May 9, 1980, Ser. No. 148,433

Int. Cl.[3] A61K *31/505;* C07D *487/04*

U.S. Cl. 424—251 8 Claims

1. A compound of the structure



wherein R^1 is hydrogen or lower alkyl containing 1 to 8 carbons; R^2 is carboxyl or lower alkoxycarbonyl containing 1 to 8 carbons in the alkoxy group; R^3 is hydrogen, lower alkyl containing 1 to 8 carbons or benzyl; R^4 and R^5 are the same or different and are selected from the group consisting of hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, lower alkanoyloxy of 1 to 4 carbons, nitro, halogen, trifluoromethyl, benzyloxy, benzyloxy having a lower alkoxy containing 1 to 8 carbons, halogen, hydroxy, or trifluoromethyl substituent, with the proviso that where R^4 and R^5 are alkyl at least one of R^4 and R^5 is other than t-butyl; and physiologically acceptable salts thereof.

7. A pharmaceutical composition for use in treating allergic conditions and adapted for administration parenterally, by aerosol or by insufflation, consisting essentially of a compound as defined in claim **1** and a pharmaceutically acceptable parenteral, aerosol or insufflation carrier therefor.

8. A method for treating allergic conditions in mammals, which includes the step of administering to the mammalian host by parenteral administration, aerosol or insufflation a therapeutic amount of a compound as defined in claim **1**.

4,282,227

RENAL VASODILATING 3,4-DIHYDROXYPHENYLTETRAHYDROTHIENOPYRIDINES

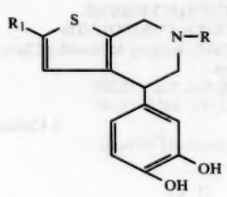
L. Martin Brenner, Havertown, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed May 22, 1980, Ser. No. 152,253

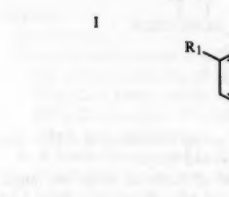
Int. Cl.[3] A61K *31/44;* C07D *495/04*

U.S. Cl. 424—256 8 Claims

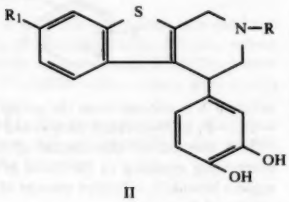
1. A chemical compound of the formula:



or



I



II

in which R is hydrogen or methyl and R_1 is hydrogen or halo; or a pharmaceutically acceptable acid addition salt thereof.

8. The method of producing renal vasodilatation in a patient in need thereof comprising administering orally or parenterally to said patient a renal vasodilating but nontoxic quantity of a compound of claims 1, 3 or 4.

4,282,228

ANIMAL FEED AND PROCESS

Melvin J. DeGeeter, and John M. McCall, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

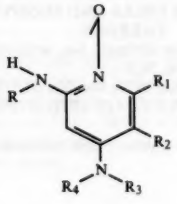
Filed Jun. 23, 1980, Ser. No. 161,945

Int. Cl.[3] **A61K** *31/505, 31/54, 31/44, 31/445*

U.S. Cl. 424—251 **8 Claims**

1. A process for obtaining increased production in meat-producing, egg-laying or milk-producing animals comprising feeding to said animals an effective amount of a compound of the formula

Formula I

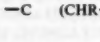


wherein R is a member selected from the group consisting of hydrogen, R_5,

wherein R_5 is alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof alkenyl of from 2 to 8 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl of from 3 to 7 carbon atoms; or lower acyl wherein acyl is up to and including 5 carbon atoms; R_1 is a member selected from the group consisting of R_5 and

wherein R_6 is selected from the group consisting of hydrogen,

or acyl wherein acyl is up to and including 5 carbon atoms; R_2 is a member selected from the group consisting of hydrogen, R_5, bromo or chloro; R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, provided that R_3 and R_4 are not both hydrogen; R_5, cycloalkyl of from 3 to 8 carbon atoms, alkyl substituted cycloalkyl of the formula



wherein n is an integer of from 2 to 7, inclusive and R_7 is a member selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, inclusive, including isomeric forms thereof; alkenyl of from 2 to 8 carbon atoms, inclusive, including isomeric forms thereof, aralkyl wherein Ar is a member selected from the group consisting of phenyl, substituted phenyl wherein 1 or 2 hydrogens are replaced with chlorine, fluorine, bromine, iodine, R_5, $-OR_5$ or $-CF_3$ and the substituents can be the same or different, and alkyl is from 1 to 4 carbon atoms, inclusive, including isomeric forms thereof; and R_3 and R_4 taken together with —N> is a heterocyclic moiety of from 4 to 8, inclusive, ring atoms and 1 or 2 hetero atoms selected from the group consisting of nitrogen, oxygen or sulfur or a substituted heterocyclic moiety wherein 0, 1, 2 or 3 of the carbon atoms of the heterocycle are substituted with R_5 in combination with a nutrient feed.

4,282,229

HYDANTOIN DERIVATIVES AS THERAPEUTIC AGENTS

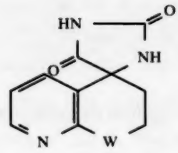
Reinhard Sarsas, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 961,256, Nov. 16, 1978, Pat. No. 4,210,756, which is a division of Ser. No. 849,546, Nov. 8, 1977, Pat. No. 4,147,795, which is a division of Ser. No. 767,803, Feb., 1977, Pat. No. 4,117,230, which is a continuation-in-part of Ser. No. 733,062, Oct. 18, 1976, abandoned. This application Sep. 4, 1979, Ser. No. 72,219

Int. Cl.[3] **A61K** *31/47, 31/44*

U.S. Cl. 424—258 **6 Claims**

1. A method of treating a diabetic host to prevent or alleviate ocular and neuritic diabetes-associated chronic complications, which comprises orally, parenterally or topically administering to said host an effective amount of a compound selected from the group consisting of spiro-hydantoins of the formula:



and the base salts thereof with pharmacologically acceptable cations, wherein W is $-(CH_2)_n-$ and n is zero or one.

4,282,230

IMIDAZOLYLETHOXY DERIVATIVES OF QUINOLINE-2- OR 4-METHANOLS, ANTIMICROBIAL COMPOSITIONS CONTAINING THEM AND METHOD FOR TREATING BACTERIAL OR FUNGAL INFECTIONS WITH THEM

Hans Hoehn, Tegernheim, Fed. Rep. of Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

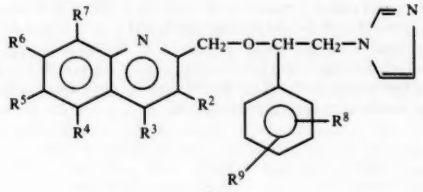
Filed Nov. 15, 1979, Ser. No. 94,528

The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.

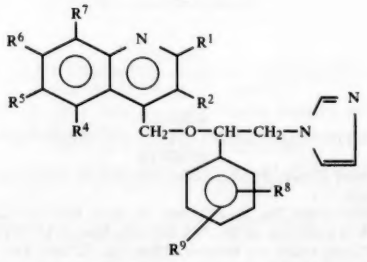
Int. Cl.[3] **A61K** *31/47;* **C07D** *401/12*

U.S. Cl. 424—258 **20 Claims**

1. A compound of the formula



or



wherein R^1 to R^9 each is hydrogen, hydroxy, halogen, lower alkyl containing 1 to 7 carbons, lower alkoxy containing 1 to 7 carbons, or lower alkylthio containing 1 to 7 carbons, and physiologically acceptable acid addition salts thereof.

19. An antimicrobial composition comprising a compound as defined in claim **1** and a pharmaceutically acceptable carrier therefor.

20. A method for treating bacterial or fungal infections in mammals which comprises administering to a mammalian host an effective amount of a compound as defined in claim **1**.

4,282,231

BIOCIDAL MERCAPTOPYRIDINE HALOACRYLYLNITRILE COMPOUNDS

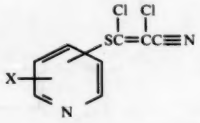
Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 25, 1980, Ser. No. 172,356

Int. Cl.[3] **C07D** *213/57;* **A0IN** *43/40*

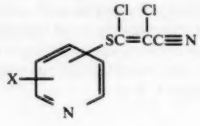
U.S. Cl. 424—263 **6 Claims**

1. A compound having the structural formula



wherein X is selected from the group consisting of —H, —Br, —Cl, —F, methyl, ethyl, propyl and butyl.

5. A method for the control of bacteria, fungi and algae comprising applying to the locus of said bacteria, fungi and algae a biocidally effective amount of a compound having the structural formula



wherein X is selected from the group consisting of —H, —Br, —Cl, —F, methyl, ethyl, propyl and butyl.

4,282,232

NITROIMIDAZOLE RADIOSENSITIZERS FOR HYPOXIC TUMOR CELLS AND COMPOSITIONS THEREOF

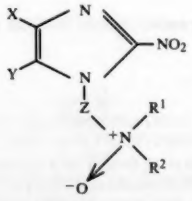
Krishna C. Agrawal, New Orleans, La., assignor to Research Corporation, New York, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,513

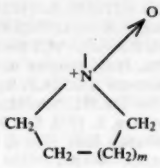
Int. Cl.[3] **A61K** *31/415, 31/445;* **C07D** *401/06, 403/06*

U.S. Cl. 424—267 **11 Claims**

1. Biologically active hypoxic cell radiosensitizers of the formula



wherein Z is a C_2–C_4 alkylene group; wherein R^1 and R^2 taken together with the nitrogen atom form a heterocyclic ring of the formula

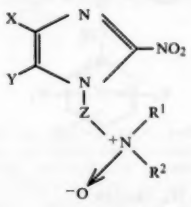


wherein

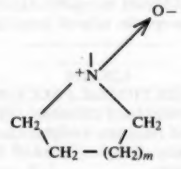
m = 1 or 2;

X and Y are the same or different substituents selected from the group consisting of hydrogen, nitro; R^3CO— where R^3 is C_1–C_4 alkyl; nitrile, carboxyamide; R^5OCO— where R^5 is C_1–C_4 alkyl; R^6—N(O)=CH— where R^6 is C_1–C_4 alkyl; and nitrilomethyl.

8. A composition useful for the radiosensitization of hypoxic tumor cells which comprises a pharmaceutically active amount of a compound having the formula:



wherein Z is a C_2–C_4 alkylene group; wherein R^1 and R^2 taken together with the nitrogen atom form a heterocyclic ring of the formula



wherein

m = 1 or 2;

X and Y are the same or different substituents selected from the group consisting of hydrogen, nitro; R^3CO— where R^3 is C_1–C_4 alkyl; nitrile; carboxyamide; R^5OCO— where R^5 is C_1–C_4 alkyl; R^6—N(O)=CH— wherein R^6 is C_1–C_4 alkyl; and nitrilomethyl; and an inert pharmaceutically acceptable carrier.

4,282,233

ANTIHISTAMINIC 11-(4-PIPERIDYLIDENE)-5H-BENZO-[5,6]-CYCLOHEPTA-[1,2-B]-PYRIDINES

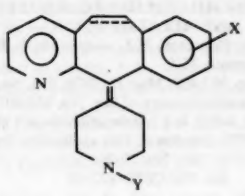
Frank J. Vilani, West Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jun. 19, 1980, Ser. No. 160,795

Int. Cl.[3] **A61K** *31/445;* **C07D** *401/04*

U.S. Cl. 424—267 **13 Claims**

1. A compound of the formula



(I)

wherein the dotted line represents an optional double bond; X is hydrogen or halo; and

wherein Y is —COOR or SO_2R; with the proviso that when Y is —COOR, R is C_1 to C_{12} alkyl, substituted C_1 to C_{12} alkyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} phenylalkyl wherein the phenyl moiety is substituted or R is -2,-3, or -4 piperidyl or N-substituted piperidyl wherein the substituents on said substituted C_1 to C_{12} alkyl are selected from amino or substituted amino and the substituents on said substituted amino are selected from C_1 to C_6 alkyl, the substituents on said substituted phenyl and on said substituted phenyl moiety of the C_7 to C_{12} phenylalkyl are selected from C_1 to C_6 alkyl and halo, and the substituent on said N-substituted piperidyl is C_1 to C_4 alkyl; and with the proviso that when Y is SO_2R, R is C_1 to C_{12} alkyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} phenylalkyl wherein the phenyl moiety is substituted, wherein the substituents on said substituted phenyl and said substituted phenyl moiety of the C_7 to C_{12} phenylalkyl are selected from C_1 to C_6 alkyl and halo.

13. A method of effecting an anti-allergic response in an animal comprising administering to the animal an effective amount of a compound as claimed in any one of claims **1** to **11**.

4,282,234

CERTAIN HETEROCYCLIC-METHYLTHIOALKYL GUANIDINE DERIVATIVES

Graham J. Durant; Charon R. Ganellin, both of Welwyn Garden City., and Rodney C. Young, Bengeo, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 896,848, Apr. 17, 1978, which is a division of Ser. No. 794,178, May 5, 1977, Pat. No. 4,107,319, which is a division of Ser. No. 551,220, Feb. 19, 1975, Pat. No. 4,036,971.

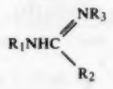
This application May 14, 1979, Ser. No. 39,090

Claims priority, application United Kingdom, Mar. 12, 1974, 10869/74

Int. Cl.[3] **C07D** *277/28, 275/02, 285/08;* **A61K** *31/425*

U.S. Cl. 424—269 **7 Claims**

1. A compound of the formula:



wherein R_1 represents a grouping of the structure

$$Het—CH_2—S—(CH_2)_n—$$

wherein Het is a nitrogen containing 5 membered heterocyclic ring selected from thiazole, isothiazole, thiadiazole and isoxazole which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; n is 2 or 3; R_2 is NHR_5; R_3 is R_1; and R_5 is lower alkyl, or a pharmaceutically acceptable acid addition salt thereof.

4,282,235

DERIVATIVES OF THIAZOLIDINECARBOXYLIC ACIDS AND RELATED ACIDS

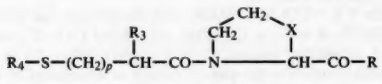
Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 907,452, May 22, 1978, Pat. No. 4,192,878, which is a continuation-in-part of Ser. No. 836,107, Sep. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 747,281, Dec. 3, 1976, abandoned. This application Sep. 27, 1979, Ser. No. 79,284

Int. Cl.³ C07D *277/02*

U.S. Cl. 424—270 **13 Claims**

1. A compound of the formula

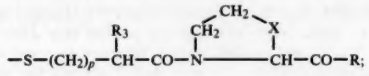


wherein

R is hydroxy or lower alkoxy;

R_3 is hydrogen, lower alkyl or mercapto-lower alkylene;

R_4 is hydrogen, lower alkanoyl, benzoyl or



X is S, SO or SO_2; and

p is 0 or 1;

or a basic salt thereof; wherein the terms lower alkyl, lower alkoxy and lower alkylene refer to groups having 1 to 7 carbon atoms and the term lower alkanoyl refers to groups having up to 7 carbon atoms; and a pharmaceutically acceptable vehicle therefor.

4,282,236

β-LACTAM ANTIBACTERIAL AGENTS, THEIR USE IN PHARMACEUTICAL COMPOSITIONS, AND INTERMEDIATES

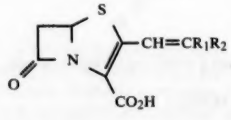
Nigel J. P. Broom, Dorking, England, assignor to Beecham Group Limited, England

Filed Nov. 7, 1979, Ser. No. 92,179

Int. Cl.³ C07D *499/00*

U.S. Cl. 424—270 **12 Claims**

1. A compound of the formula (II):



(II)

or a salt or cleavable ester thereof wherein R_1 is a hydrogen atom or a lower alkyl group and R_2 is a CN or CO_2R_3 group where R_3 is hydrogen or lower alkyl, or phenyl unsubstituted or substituted by halogen or alkoxyl of one or two carbon atoms or lower alkyl substituted by phenyl or phenyl substituted by halogen or alkoxy of one or two carbon atoms.

4,282,237

METHOD WITH SUBSTITUTED 1-BENZYL-1H-INDAZOLE-3-CARBOXYLIC ACIDS FOR INTERRUPTING PREGNANCY IN MAMMALS

Bruno Silvestrini, Rome, Italy, assignor to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

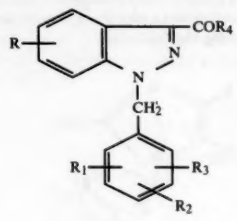
Continuation of Ser. No. 741,161, Nov. 11, 1976, abandoned. This application Aug. 8, 1978, Ser. No. 932,062

Claims priority, application Italy, Dec. 1, 1975, 29845 A/75

Int. Cl.² A61K *31/415*

U.S. Cl. 424—273 N **4 Claims**

1. A process for interrupting pregnancy and causing resorption of the fetus in a pregnant female which comprises administering to said female an effective amount therefor of at least one compound belonging to the class of substituted 1-benzyl-1H-indazole-3-carboxylic acids, amides and esters having the Formula (I)



I

wherein

R is H, CH_3, OCH_3, halogen;

R_1 is H, CH_3, or halogen;

R_2 is halogen, CH_3, OCH_3, CF_3, $CONH_2$, SO_2CH_3;

R_3 is H, halogen;

R_4 is OH, NH_2, OR_5;

R_5 being an easily hydrolyzable group $—CH_2\ CH_2\ OH$, $—CH_2\ CHOH\ CH_2OH$ or $—CH(CH_2OH)_2$, and the pharmaceutically acceptable salts of these compounds.

4,282,238

INSECTICIDAL PROCESS

Norbert Goetz, Worms; Anna Steimmig; Bernd Zeeh, both of Ludwigshafen, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

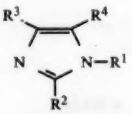
Division of Ser. No. 952,802, Oct. 19, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 60,836

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750031

Int. Cl.³ A01N *43/50*

U.S. Cl. 424—273 R **2 Claims**

1. A process for controlling insects which consists essentially of applying to the insects or their habitat an effective amount of an imidazol derivative of the formula



I,

wherein R^1 denotes branched alkyl of 6 to 20 carbon atoms, linear alkyl of 6 to 16 carbon atoms, branched alkenyl of 10 to 20 carbon atoms, linear or branched alkynyl of 3 to 6 carbon atoms, 2-methyl-3-phenylpropyl or 2-methyl-3-phenylpropen-2-yl, phenyl being unsubstituted or mono- or polysubstituted by halogen or alkyl of 1 to 10 carbon atoms, and R^2, R^3 and R^4 denote hydrogen or methyl, or a salt of such an imidazole derivative.

4,282,239
SULFONYL UREAS AND PHARMACEUTICAL PREPARATIONS THEREOF

Rudi Weyer, Kelkheim; Volker Hitzel, Hofheim am Taunus; Karl Geisen, Frankfurt am Main, and Günter Regitz, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

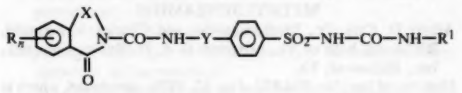
Filed Jun. 25, 1979, Ser. No. 51,548

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828079

Int. Cl.³ A61K *31/40;* **C07D** *207/12*

U.S. Cl. 424—274 **8 Claims**

1. A sulfonylurea having the formula



wherein n is 1 or 2, R is hydrogen, alkyl or alkoxy with 1 to 4 carbon atoms or halogen which may be identical or different when n is 2, X is $-CH_2-$ or

Y is alkylene with 2 or 3 carbon atoms, and R^1 is alkyl with 2 to 8 carbon atoms, cycloalkyl, alkylcycloalkyl, dialkylcycloalkyl, cycloalkylalkyl, cycloalkenyl or alkylcycloalkenyl, in each case with 4 to 9 carbon atoms, methylcyclopentylmethyl, cyclohexenylmethyl, chlorocyclohexyl, methoxycyclohexyl, 2-bicyclo[2,2,1]heptyl, 2-bicyclo[2,2,1]hept-5-enyl, 2-bicyclo[2,2,1]heptylmethyl, 2-bicyclo[2,2,1]hept-5-enylmethyl, 2-bicyclo[2,2,2]octyl, nortricyclyl, adamantyl or benzyl, or a physiologically tolerated salt thereof.

8. Process for lowering the blood sugar level in the treatment of diabetes which comprises administering to a patient in need thereof an effective amount of a compound as defined in claim **1**.

4,282,240
AMINO SUBSTITUTED TETRAHYDROBENZINDOLES

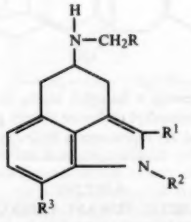
John J. Baldwin, Lansdale; James H. Jones, and George F. Lundell, both of Blue Bell, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 23, 1979, Ser. No. 96,948

Int. Cl.³ A61K *31/40;* **C07D** *209/90*

U.S. Cl. 424—274 **8 Claims**

1. A pharmaceutical composition for treating hypertension containing an effective amount of a compound having the formula



and pharmaceutically acceptable salts thereof wherein

R is H, alkyl having up to 6 carbon atoms, phenyl and monosubstituted phenyl wherein the substituent is halogen, C_1–C_3alkyl or C_1–C_3alkoxy,

R^1 is H or halogen,

R^2 is H, alkyl having up to 6 carbon atoms, phenyl-C_1–C_3alkyl or monosubstituted phenyl-C_1–C_3alkyl wherein the substituent is halogen, C_1–C_3alkyl or C_1–C_3alkoxy, and

R^3 is H, OH, halogen, OCH_3 or C_1–C_3alkyl and pharmaceutically acceptable compounding ingredient.

8. A method of treating hypertension which comprises administering an effective amount of a composition of claim **1**.

4,282,241
ORGANIC FLUORO-IMIDES, THEIR PREPARATION AND USE

Hans B. Madsen; Per D. Klemmensen, and Hans Kolind-Andersen, all of Lemvig, Denmark, assignors to A/S Cheminova, Lemvig, Denmark

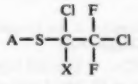
Continuation of Ser. No. 967,507, Dec. 7, 1978, abandoned, which is a division of Ser. No. 742,592, Nov. 17, 1976, Pat. No. 4,148,901. This application Jan. 28, 1980, Ser. No. 115,720

Claims priority, application United Kingdom, Nov. 25, 1975, 48441/75; Aug. 25, 1976, 35820/76

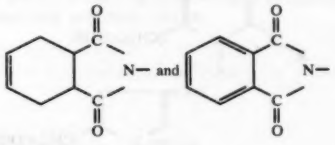
Int. Cl.³ A01N *37/32;* **C07D** *209/48*

U.S. Cl. 424—274 **8 Claims**

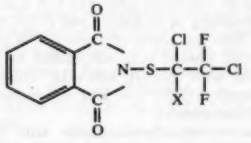
1. A method for protecting non-living wood from fungal attack comprising the step of treating said non-living wood with an effective amount of a compound of the formula:



wherein X is selected from the group consisting of chlorine or fluorine, and A is selected from the group consisting of



5. A compound of the formula



wherein X is selected from the group consisting of chlorine and fluorine.

4,282,242
ANTIDIABETIC PYRROLECARBOXYLIC ACIDS

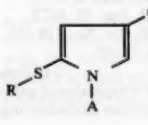
Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,119

Int. Cl.³ C07D *207/36;* **A61K** *31/40*

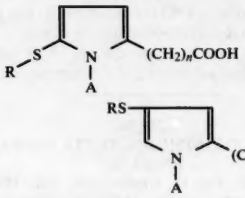
U.S. Cl. 424—274 **18 Claims**

1. A compound selected from the group consisting of pyrrole carboxylic acids of structures I, II and III:

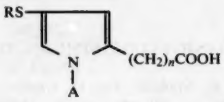


(I)

-continued



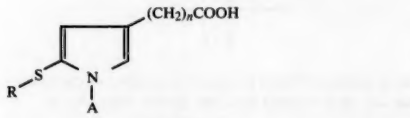
(II)



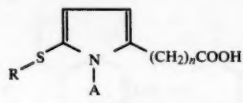
(III)

wherein n is an integer of value 0 or 1; A is selected from the group consisting of hydrogen and $(C_1–C_2)$alkyl; and R is selected from the group consisting of $(C_1–C_5)$alkyl; benzyl; phenyl; phenyl monosubstituted in the 2-, 3- and 4-positions with methyl, methoxy, chloro, fluoro or trifluoromethyl; 2,5-, 2,4- or 3,4-dichlorophenyl; and 2,4,5-trichlorophenyl;
the pharmaceutically-acceptable salts thereof, and the $(C_1–C_3)$alkyl esters thereof.

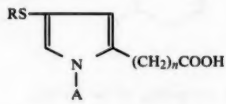
13. A method of lowering the level of blood glucose in a hyperglycemic mammal which comprises administering to said hyperglycemic mammal a compound selected from the group consisting of pyrrole carboxylic acids of structures I, II and III:



(I)



(II)



(III)

wherein n is an integer of value 0 or 1, A is selected from the group consisting of hydrogen and $(C_1–C_2)$alkyl and R is selected from the group consisting of $(C_1–C_5)$alkyl; benzyl; phenyl; phenyl monosubstituted in the 2-, 3- and 4-positions with methyl, methoxy, chloro, fluoro and trifluoromethyl; 2,5-, 2,4- and 3,4-dichlorophenyl; and 2,4,5-trichlorophenyl;
and the pharmaceutically-acceptable salts thereof, in an amount sufficient to lower said blood glucose level in said hyperglycemic mammal.

4,282,243

OPTICAL ISOMERS OF 4-AMINO-N-(1-CYCLOHEXYL-3-PYRROLIDINYL)-N-METHYLBENZAMIDE

Albert D. Cale, Jr., Mechanicsville, and Charles A. Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 914,833, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 658,989, Feb. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 518,125, Oct. 25, 1974, abandoned, which is a continuation of Ser. No. 340,417, Mar. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 240,840, Apr. 30, 1972, abandoned. This application Mar. 10, 1980, Ser. No. 128,693

Int. Cl.[3] **C07D** *207/14;* **A61K** *31/40*

U.S. Cl. 424—274 **2 Claims**

1. A method for reducing the effects of drug-induced catalepsy in warm-blooded animals which comprises administering internally to animals in need thereof an effective amount of (+)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methyl benzamide fumarate in the presence of a pharmaceutical carrier thereof.

2. A method for reducing the effects of drug-induced catalepsy in warm-blooded animals which comprises administering internally to animals in need thereof an effective amount of (+)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methyl benzamide malate in the presence of a pharmaceutical carrier therefor.

4,282,244

OPTICAL ISOMERS OF 4-AMINO-N-(1-CYCLOHEXYL-3-PYRROLIDINYL)-N-METHYLBENZAMIDE

Albert D. Cale, Jr., Mechanicsville, and Charles A. Leonard, Richmond, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 914,833, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 658,989, Feb. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 518,125, Oct. 25, 1974, abandoned, which is a continuation of Ser. No. 340,417, Mar. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 240,840, Apr. 30, 1972, abandoned. This application Mar. 10, 1980, Ser. No. 128,694

Int. Cl.[3] **C07D** *207/14;* **A61K** *31/40*

U.S. Cl. 424—274 **2 Claims**

1. A method for controlling emesis in warm blooded animals which comprises administering internally to said animals in need thereof an effective amount of (−)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide malate in the presence of a pharmaceutical carrier therefor.

2. A method for controlling emesis in warm blooded animals which comprises administering internally to said animals in need thereof an effective amount of (−)-4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide fumarate in the presence of a pharmaceutical carrier therefor.

4,282,245

DIBENZOTHIEPIN DERIVATIVES AND A PROCESS FOR PRODUCING THE SAME

Yasuo Fujimoto, Tokyo, and Shigeru Yamabe, Kobe, both of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

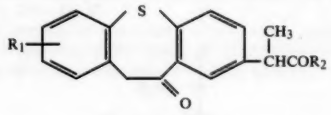
Filed May 23, 1979, Ser. No. 41,560

Claims priority, application Japan, Jun. 2, 1978, 53-65691

Int. Cl.[3] **A61K** *31/38;* **C07D** *337/14*

U.S. Cl. 424—275 **17 Claims**

1. A compound of the formula (I),



(I)

wherein R_1 represents a halogen atom, or a hydroxy, nitro, amino, trihalogenomethyl or lower alkoxy group having 1 to 5 carbon atoms, and R_2 represents a hydroxy or amino group.

4,282,246

ANTIDIABETIC FURANCARBOXYLIC AND THIPHENECARBOXYLIC ACIDS

Gerald F. Holland, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

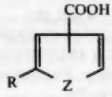
Filed Mar. 7, 1980, Ser. No. 128,362

Int. Cl.[3] **A61K** *31/38, 31/34*

U.S. Cl. 424—275 **43 Claims**

1. A method of lowering the blood glucose level in a hyper-

glycemic mammal which comprises administering a compound of structure



wherein

Z is oxygen or sulfur;

R is (C_1–C_2)alkoxy;

phenoxy;

benzyl;

phenylthiomethyl;

phenylthio;

phenylthio monosubstituted in the 2-, 3- or 4-position with (C_1–C_3)alkyl, phenyl, methoxy, chloro, fluoro or trifluoromethyl;

phenylthio disubstituted in the 2,5- or 3,5-positions with methyl, methoxy, chloro, or fluoro;

2,3,5,6-tetrafluorophenylthio;

1- or 2-naphthylthio;

(C_2–C_6)alkylthio; or

halo (bromo or chloro); or

a pharmaceutically-acceptable salt thereof, to said hyperglycemic mammal in an amount sufficient to lower said blood glucose level.

4,282,247

5-(2-HYDROXY-3-THIOPROPOXY) CHROMONE-2-CARBOXYLIC ACIDS CHEMICAL PROCESS AND PHARMACEUTICAL COMPOSITIONS

Andrea Pedrazzoli, Milan, and Sergio Boveri, Monza, both of Italy, assignors to CM Industries, Paris, France

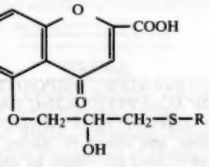
Filed Mar. 27, 1980, Ser. No. 134,690

Claims priority, application France, Apr. 6, 1979, 79 08859

Int. Cl.³ A61K *31/35;* **C07D** *311/22*

U.S. Cl. 424—283 **4 Claims**

1. A compound selected from the group consisting of 5-(2-hydroxy-3-thiopropoxy)chromone-2-carboxylic acids of the formula



wherein R is a member selected from the group consisting of alkyl groups of from 1 to 16 carbon atoms, alkenyl groups of 3 to 4 carbon atoms, cycloalkyl groups of from 3 to 8 carbon atoms and cycloalkylalkyl groups of from 4 to 9 carbon atoms; and alkali and alkaline-earth metal salts thereof; and alkyl esters thereof having 1 to 4 carbon atoms.

4. The compound as recited in claim **1**, **2**, or **3** in admixture with a pharmaceutical carrier wherein said compound is present in the range from 5 to 250 milligrams by weight and serves as an active ingredient to inhibit allergic reactions.

4,282,248

PINENE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Raphael Mechoulam, Tcheruichovsky 12, Jerusalem; Naphtali Lander, Even Gevirol 182, Tel-Aviv, and Shabtay Dikstein, 7 Habanai St., Jerusalem, all of Israel

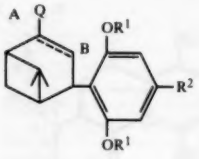
Filed Jul. 23, 1979, Ser. No. 59,859

Claims priority, application Israel, Aug. 2, 1978, 55274

Int. Cl.³ A61K *31/22, 31/05;* **C07C** *69/013, 39/17*

U.S. Cl. 424—299 **12 Claims**

1. A compound of the general formula



wherein

R^1 is hydrogen or —CO—alk, where alk is lower alkyl of up to 5 carbon atoms,

R^2 is 1,1-dimethylheptyl or 1,2-dimethylheptyl, with the proviso that:

when A—B is a single bond Q is $—CH_3$, and

when A—B is a double bond, Q is $—CH_2OR^4$ and R^4 is hydrogen or —CO—alk where alk is lower alkyl of up to 5 carbon atoms.

8. An analgesic composition comprising an analgesically effective amount of the compound of claim **1** together with a pharmaceutically acceptable carrier.

4,282,249

OXYIMINO-SUBSTITUTED (1R, CIS)-CYCLOPROPANECARBOXYLATE PESTICIDES

Steven A. Roman, Oakdale, and Samuel B. Soloway, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

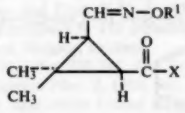
Continuation-in-part of Ser. No. 911,743, Jun. 2, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,841

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.³ A01N *35/10, 37/34;* **C07C** *61/37, 69/747*

U.S. Cl. 424—304 **14 Claims**

1. A (1R,cis)-cyclopropane compound, substantially free of other stereoisomers, having the formula



wherein R^1 is a (cycloalkyl)alkyl group containing 3 to 6 ring carbon atoms and 4 to 8 total carbon atoms and X is chlorine, bromine or OR in which R represents a hydrogen atom, a salt-forming cation, an alkyl group containing from 1 to 20 carbon atoms, 3-phenoxybenzyl or α-cyano-3-phenoxybenzyl, with the proviso that when R is α-cyano-3-phenoxybenzyl then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

4,282,250

REMEDY FOR SKIN INJURIES AND DISEASES

Vassilios P. Papageorgiou, Angelaki 33, Thessaloniki, Greece

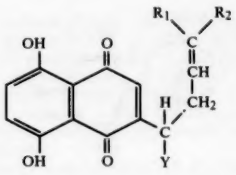
Filed Jan. 6, 1978, Ser. No. 867,532

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1977, 2700448

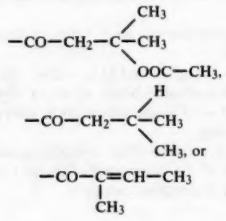
Int. Cl.[3] A61K *31/22*

U.S. Cl. 424—311 17 Claims

1. A composition suitable for external application for healing open wounds, including Ulcus cruris, comprising as its essential active ingredient from about 0.01–3% by weight of at least one compound of the general formula:



wherein Y is —OX in which X represents



and R_1 and R_2 are methyl and a suitable carrier.

4,282,251

TRANS-N-CINNAMYL-N-METHYL-(1-NAPHTHYLMETHYL)AMINE

Daniel Berney, Lausanne, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

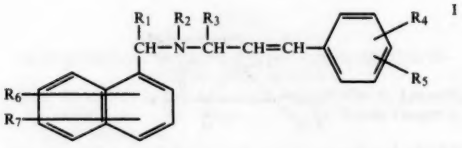
Continuation-in-part of Ser. No. 1,479, Jan. 8, 1979, abandoned, which is a continuation of Ser. No. 789,808, Apr. 22, 1977, abandoned. This application Dec. 3, 1979, Ser. No. 100,024

Claims priority, application Switzerland, Apr. 28, 1976, 5335/76; Dec. 22, 1976, 16182/76; Jan. 26, 1977, 920/77; Jan. 26, 1977, 921/77

Int. Cl.[3] A01N *33/02, 37/30;* C07C *87/28*

U.S. Cl. 424—316 29 Claims

1. Compounds of formula I,



in which

R_1 is hydrogen or alkyl,

R_2 is alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylalkyl,

R_3 is hydrogen or lower alkyl, and

R_4, R_5, R_6 and R_7, which may be the same or different, each signifies hydrogen, halogen, trifluoromethyl, hydroxy, nitro or lower alkyl or alkoxy, and

chemotherapeutically acceptable acid addition salts thereof.

3. A method of treating mycotic disorders comprising administering to an animal in need of such treatment, an effective amount of a compound of claim 1.

4,282,252

METHOD OF INCREASING CORONARY BLOOD FLOW WITH IBUPROFEN

Allan M. Lefer, Montgomery, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed May 15, 1980, Ser. No. 150,048

Int. Cl.[3] A61K *31/19*

U.S. Cl. 424—317 9 Claims

1. A method of treating a patient suffering from angina, coronary heart disease, or coronary vasospasm, and who exhibits periodic symptoms of reduced coronary blood flow, which comprises administering to said patient an amount of ibuprofen effective to cause dialation of the coronary arteries of said patient, whereby coronary blood flow is substantially increased.

4,282,253

TOPICAL PROPHYLAXIS AGAINST SCHISTOSOMIASIS

Edgar A. Steck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 14, 1979, Ser. No. 94,259

Int. Cl.[3] A61K *31/135*

U.S. Cl. 424—330 16 Claims

1. A method for preventing schistosomiasis in a mammal exposed to schistosome-infected water which comprises: applying to the skin of said mammal prior to exposure to the schistosome-infected water a composition comprising dehydroabietylamine or a pharmaceutically acceptable salt or adduct thereof in an amount sufficient to achieve an anti-penetrant effect against cercariae of infectious schistosome parasites.

4,282,254

DOG FOOD OF IMPROVED ACCEPTABILITY

Roger W. Franzen, Pleasantville, N.Y.; Gerald Greber, Westport, Conn., and William C. Rieken, New Milford, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 4, 1979, Ser. No. 81,975

Int. Cl.[3] A23K *1/00*

U.S. Cl. 426—2 11 Claims

1. In a nutritionally-balanced dog food consisting essentially of fat, protein, carbohydrates, vitamins and minerals, the improvement wherein the dog food contains an amino acid selected from the group consisting of L-tryptophan, L-arginine, L-isoleucine, L-leucine, L-serine, and combinations of any of these in an amount between about 0.001% to 0.8%, the amount being effective to increase the palatability of the dog food for dogs.

4,282,255

METHOD AND STARTER COMPOSITIONS FOR THE GROWTH OF ACID PRODUCING BACTERIA AND BACTERIAL COMPOSITIONS PRODUCED THEREBY

William E. Sandine, and James W. Ayres, both of Corvallis, Oreg., assignors to State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University, Corvallis, Oreg.

Filed Jun. 28, 1979, Ser. No. 52,960

Int. Cl.[3] A23C *9/123, 9/12;* C12N *1/20*

U.S. Cl. 426—7 25 Claims

1. In a method for growing acid producing bacteria to be used in fermenting foods by inoculating the bacteria into a growth medium containing water and nutrients for the bacteria and then growing the bacteria in the growth medium and using the bacteria so grown for fermenting the food the improvement which comprises:

(a) providing an essentially water insoluble non-toxic basic neutralizing agent in the growth medium such that a portion of the neutralizing agent remains in solid form in the medium, wherein the neutralizing agent is a magnesium phosphate or magnesium ammonium phosphate in an amount sufficient with other media ingredients to inhibit lactic bacteriophage, wherein an amount of the neutralizing agent is added initially to the growth medium prior to the generation of acid by the bacteria which is at least sufficient to maintain the pH above about 5 over a period of time such that without the neutralizing agent the pH would be reduced to below about pH 5 and wherein the growth medium and neutralizing agent are adapted for growing the acid producing bacteria to be used in fermenting the food;

(b) growing the bacteria in the growth medium in the presence of the neutralizing agent with the medium and cells in contact with the neutralizing agent, wherein a pH range in the medium is maintained so as to promote growth of the bacteria by a controlled reaction of the neutralizing agent with at least a part of the acid produced by the bacteria in the medium over a period of time; and

(c) fermenting the food with the bacteria after they have been grown in the growth medium including the neutralizing agent.

4,282,256

PREPARATION OF AN ANIMAL FEED SUPPLEMENT FROM FISH CANNERY PROCESS WASTE WATER

Vince J. Evich, San Pedro; Gerald C. Brown, Long Beach, and Howard J. Dunn, Lomita, all of Calif., assignors to Star-Kist Foods, Inc., Terminal Island, Calif.

Filed Oct. 22, 1979, Ser. No. 87,080
Int. Cl.³ A23K *1/10*
U.S. Cl. 426—7 **12 Claims**

1. A method for the preparation of an animal feed from fish cannery wastes comprising:

aerating fish cannery waste water until the water is substantially saturated with air;

separating the aerated waste water with an air flotation cell, in the presence of a first polyionic polymer and a floculating agent, into a sludge fraction concentrated in fat and protein, a clarified water fraction, and a grit fraction;

aerating the separated sludge fraction;

dewatering the sludge fraction by centrifugation in the presence of a second polyionic polymer with substantially the opposite charge of said first polyionic polymer;

adding to the aerated, dewatered sludge an antioxidant to prevent oxidation of lipids in the sludge;

drying the sludge under vacuum at a low temperature while blending with an absorptive, animal-edible bulk carrier solid in volumetric proportions from about 1:4 to 1:1 parts carrier to sludge solids to produce an animal feed supplement as a dry particulate solid.

4,282,257

PRODUCTION OF VINEGAR WITH HIGH ACETIC ACID CONCENTRATION

Yoshio Kunimatsu; Hajime Okumura; Hiroshi Masai; Koki Yamada, and Mikio Yamada, all of Handa, Japan, assignors to Nakano Vinegar Co., Ltd., Japan

Filed Jan. 25, 1980, Ser. No. 115,419
Claims priority, application Japan, Feb. 13, 1979, 54-14216
Int. Cl.³ C12J *1/00;* C12P *7/54*
U.S. Cl. 426—17 **1 Claim**

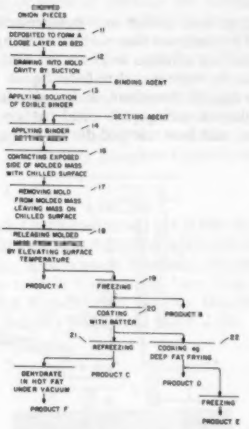
1. A process for the production of vinegar by a submerged fermentation, which comprises maintaining the temperature of a fermenting broth at 27°–32° C. until the acetic acid concentration of the fermenting broth after the initiation of the fermentation reaches 12–15% weight by volume and thereafter maintaining the temperature of the fermenting broth at 18°–24° C. until finished vinegar having an acetic acid concentration higher than 18% weight by volume is obtained.

4,282,258

METHOD AND APPARATUS FOR THE MANUFACTURE OF FORMED EDIBLE PRODUCTS AND PRODUCTS RESULTING THEREFROM

John H. Forkner, 2116 Mayfair Dr. West, Fresno, Calif. 94118

Continuation-in-part of Ser. No. 892,670, Apr. 3, 1978, abandoned. This application Aug. 6, 1979, Ser. No. 63,821
Int. Cl.³ A23L *1/04*
U.S. Cl. 426—100 **33 Claims**



1. In a method for producing molded forms from moist edible material, the steps of applying a die having a mold cavity to a layer or bed of pieces of the material, the mold cavity having its open side faced toward the bed, applying pneumatic suction to the die cavity while it is so applied whereby pieces are drawn into the cavity to fill the same, removing the die from the bed with the pieces within the cavity, applying a solution of a binding agent to the pieces while in the cavity, applying the open side of the die cavity and the corresponding side of the mass of material within the cavity to a surface that is at a temperature level below that of the material in the cavity, whereby the material is chilled and caused to adhere to the surface, removing the mold from the chilled surface whereby the molded form of the material is left adhering to the chilled surface, and elevating the temperature of the chilled surface to release the molded form from the surface and then removing the molded form from the same.

4,282,259

PROCESS FOR PREPARING AN EXTRACT OF HOPS

Alfred G. Wheldon, and Peter E. Cockerill, both of Dagenham Dock, England, assignors to The Distillers Company (Carbon Dioxide) Limited, Reigate, England

Continuation of Ser. No. 898,246, Apr. 20, 1978, abandoned. This application Mar. 7, 1980, Ser. No. 128,061
Claims priority, application United Kingdom, Apr. 29, 1977, 18056/77
Int. Cl.³ A23L *1/20, 1/28*
U.S. Cl. 426—231 **9 Claims**

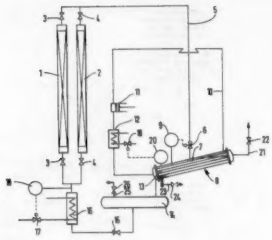
1. A method of preparing an extract of hops by extraction with liquid, non-supercritical carbon dioxide, comprising the steps of:

(a) contacting a supply of hops with carbon dioxide in the liquid, non-supercritical state and at a first temperature to dissolve matter, to be extracted, in said liquid, non-supercritical carbon dioxide;

(b) supplying heat to the resulting solution of extract matter in liquid carbon dioxide to evaporate non-supercritical carbon dioxide vapour from said solution and concentrate said extract matter in said solution to form a concentrated solution of extract matter in liquid carbon dioxide, said concentrated solution of extract matter in liquid carbon dioxide being at a second temperature which is at or above said first temperature and below the critical temperature of carbon dioxide;

(c) compressing said evaporated carbon dioxide vapour to increase its liquefaction temperature to a third temperature which is above said second temperature and below the critical temperature of carbon dioxide, whereby said carbon dioxide vapour is maintained in its non-supercritical state;

(d) bringing said heated and compressed carbon dioxide vapour into indirect thermal heat exchanging contact with said resulting solution to condense said compressed carbon dioxide vapour and re-form liquid, non-supercritical carbon dioxide therefrom, and to simultaneously transfer heat released during such condensation to said resulting solution, said heat released during said condensation pro-



viding said heat supplied to said resulting solution of extract matter in liquid carbon dioxide to evaporate non-supercritical carbon dioxide vapour from said resulting solution;

(e) sub-cooling said condensed, reformed, liquid, non-supercritical carbon dioxide to reduce its temperature to said first temperature;

(f) re-cycling said reformed, liquid, non-supercritical carbon dioxide at said first temperature to contact said supply of hops;

(g) continuing said re-cycling of said reformed, liquid, non-supercritical carbon dioxide until said concentration of said concentrated solution of extract builds up to such an extent that two separate liquid phases are formed with one phase contacting extract matter that has fallen out of solution and the other phase being said solution of extract matter in liquid, non-supercritical carbon dioxide;

(h) separating said one phase containing extract matter that has fallen out of solution from said other phase containing said solution of said extract matter in said non-supercritical carbon dioxide; and

(i) recovering said one phase.

4,282,260

METHOD FOR INHIBITING THE GROWTH OF *CLOSTRIDIUM BOTULINUM* AND THE FORMATION OF ENTEROTOXIN IN SMOKED MEAT PRODUCTS

Joseph F. Jadlocki, Jr., Mount Holly, N.J., and John S. Thompson, Wayne, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 14, 1980, Ser. No. 140,328
Int. Cl.[3] A23B *4/02*; A23L *1/31*
U.S. Cl. 426—264 **14 Claims**

1. A method of inhibiting the production of enterotoxin from *Clostridium botulinum* and, upon heating, reducing formation of nitrosamines from nitrite salt in smoked meat products which comprises the step of incorporating into meat a compound selected from the group consisting of hypophosphorous acid, sodium hypophosphite, potassium hypophosphite, calcium hypophosphite and manganese hypophosphite in an amount effective to inhibit production of enterotoxin from *Clostridium botulinum* and less than 120 ppm of an alkali metal nitrite salt.

4,282,261

BEVERAGE FILTRATION PROCESS

James T. Greene, Middletown, Conn., assignor to AMF Incorporated, White Plains, N.Y.

Continuation-in-part of Ser. No. 65,258, Aug. 9, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,389
Int. Cl.[3] C12H *1/04*
U.S. Cl. 426—330.4 **15 Claims**

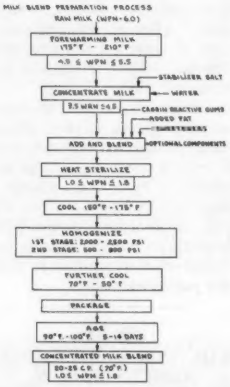
3. A process of stabilizing unstable beverages against haze development which comprises conducting said beverage in a haze-free condition and at ambient temperature through a first filter medium to form haze in said beverage and thereafter filtering the formed haze at ambient temperature with a second filter medium; said first filter medium being comprised of fine particulate and a self-bonding matrix of cellulose fiber, the surfaces of at least one of which are modified with a polyamido-polyamine epichlorhydrin cationic resin to provide a positive Zeta potential, the matrix incorporating beaten cellulose fiber to provide a Canadian Standard Freeness of less than 600 ml.

4,282,262

DAIRY BASED MIXES FOR FROZEN DESSERTS AND METHOD OF PREPARATION

Jon R. Blake, Brooklyn Center, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Mar. 4, 1980, Ser. No. 127,028
Int. Cl.[3] A23C *23/00*; A23G *9/02*
U.S. Cl. 426—565 **20 Claims**



1. A two-packet dessert mix, comprising:

A. From about 15% to 35% by weight of the dessert mix of a dry blend fraction, comprising:

(1) from about 50% to 70% by weight of the dry blend fraction of a nutritive carbohydrate sweetening agent,

(2) from about 3% to 8% of non-fat dry milk solids,

(3) from about 1% to 2% of a whipping agent, and

(4) from about 0.1% to 1.2% of a stabilizer gum selected from the group consisting of xanthan, carrageenan, guar, and mixtures thereof,

B. From about 65% to 85% by weight of the dessert mix of a milk blend fraction, comprising:

(1) from about 1% to 9% by weight of the milk blend fraction of fat,
(2) from about 17% to 21% non-fat milk solids,
(3) from about 1% to 7% of a nutritive carbohydrate sweetening agent,
(4) from about 0.001% to about 0.1% of a casein reactive gum selected from the group consisting of kappa carrageenan, xanthan, guar, and mixtures thereof,
(5) from about 0.01% to 0.1% of a stabilizer salt,
(6) from about 65% to 75% moisture; and wherein the milk blend fraction has a viscosity of from about 20 to 25 cp., and a whey protein nitrogen value of about 1.0 to 1.8.

4,282,263

PROCESS FOR PRODUCING A GASIFIED FUSIBLE SUGAR COMPOSITION

J. Ray Barnes, Warson Woods; Robert E. Holdegraver, St. Louis, and Raymond K. Meibaum, Florissant, all of Mo., assignors to Sunmark, Inc., St. Louis, Mo.

Filed May 10, 1979, Ser. No. 37,852
Int. Cl.³ A23G *3/00*
U.S. Cl. 426—572 **20 Claims**

1. A process for producing a gasified solid product comprising an undissolved gas in a matrix of solid material comprising a fusible sugar, the process comprising the steps of:
continuously feeding an aqueous solution of fusible sugar to an evaporator;
continuously heating said solution while flowing it through the evaporator to drive off water and produce a concentrated fused sugar composition whose moisture content is low enough so that, at room temperature, the composition will congeal to a glass having a viscosity high enough to contain pressurized gas bubbles therein;
continuously discharging said concentrated sugar composition from said evaporator;
continuously introducing a gas at a pressure of at least about 400 psig into a stream of said concentrated sugar composition; flowing said concentrated sugar composition and said gas through an in-line mixer and there subjecting them to intense agitation sufficient to achieve uniform dispersion of the gas throughout the sugar composition and produce a gasified fused sugar composition containing small evenly distributed bubbles of undissolved gas at a concentration of at least about 3 ml. (STP) gas per gram of concentrated sugar composition; and
cooling said gasified sugar composition to produce a product comprising a solid matrix comprising sugar and having the properties of a glass and, contained within said matrix, evenly distributed small bubbles of said gas.

4,282,264

PROCESS FOR REMOVING BITTER TASTE FROM A FRUIT OR VEGETABLE EXTRACT, AND THE DEBITTERED EXTRACT THUS OBTAINED

Daniele Magnolato, Chardonne, Switzerland, assignor to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jan. 23, 1980, Ser. No. 114,681
Claims priority, application Switzerland, Jan. 26, 1979, 786/79
Int. Cl.³ A23L *2/00, 2/28*
U.S. Cl. 426—599 **10 Claims**

1. A process for debittering a citrus fruit extract or juice which comprises contacting the extract or juice with an adsorbent consisting of desugared carob particles at a temperature of between 10° and 60° C.

4,282,265

FAT COMPOSITIONS FOR INFANT FORMULAS

Richard C. Theuer, Westport, Conn., assignor to Bristol-Myers Company, New York, N.Y.

Filed Jan. 14, 1980, Ser. No. 112,041
Int. Cl.³ A23D *5/00*
U.S. Cl. 426—607 **4 Claims**

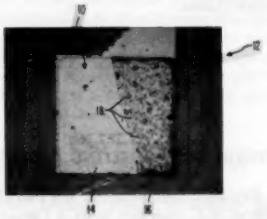
1. A fat composition consisting of a mixture of selected vegetable oils containing from 20% to 50% by weight of palm oil, from 10% to 45% by weight of a lauric acid oil selected from the group consisting of coconut oil, babassu oil, and palm kernel oil, from 10% to 25% by weight of an oleic acid oil selected from the group consisting of oleic oil and olive oil, and up to 20% by weight of a linoleic acid oil selected from the group consisting of corn oil, soybean oil, sunflower seed oil and safflower oil wherein for each 100 parts by weight of fatty acids present as triglycerides in said composition from 28 to 46 parts by weight thereof are oleic acid, from 18 to 28 parts by weight thereof are palmitic acid, and from 6 to 16 parts by weight thereof are linoleic acid wherein the aggregate of oleic acid and palmitic acid exceeds 50 parts by weight, said composition being adapted for feeding to an infant as the sole fat ingredient of a nutritionally complete liquid formula product.

4,282,266

METHOD FOR DETERMINING SILICON CONTENT IN LAYERS OF ALUMINUM AND SILICON

Albert W. Fisher, East Amwell Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,598
Int. Cl.³ B05D *5/12*; C23F *1/00*
U.S. Cl. 427—9 **4 Claims**



1. A method for determining the silicon content in an aluminum film on a substrate comprising the steps of:
(a) immersion plating said substrate in a solution comprising de-ionized water, hydrofluoric acid, and copper sulfate which will plate onto the silicon in the film while etching the aluminum film; then
(b) removing said substrate from said solution and visually examining the aluminum film to determine whether the areas plated thereon are continuous or discontinuous.

4,282,267

METHODS AND APPARATUS FOR GENERATING PLASMAS

Birol Küyel, Hopewell, N.J., assignor to Western Electric Co., Inc., New York, N.Y.

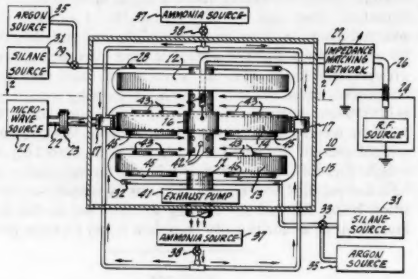
Continuation-in-part of Ser. No. 77,220, Sep. 20, 1979, abandoned. This application Mar. 5, 1980, Ser. No. 127,296
Int. Cl.³ C23C *11/08*
U.S. Cl. 427—38 **25 Claims**

1. A method of separately activating at least two potentially reactive species to form a reactive plasma when combined, each of said potentially reactive species having a different activation level, said method comprising the steps of:
(a) forming a non-reactive plasma so as to create therein an activated species of at least one of said potentially reactive species;

(b) separately activating the other of said potentially reactive species having the higher activation level; and

(c) flowing the activated species having the higher activation level into said non-reactive plasma to create a reactive plasma.

17. Apparatus for separately activating at least two potentially reactive species to form a reactive plasma when combined, each of said potentially reactive species having a different activation level, said apparatus comprising:



means for forming a non-reactive plasma so as to create therein an activated species of at least one of said potentially reactive species;

means for separately activating the other of said potentially reactive species having the higher activation level; and

means for flowing the activated species having the higher activation level into said non-reactive plasma to create a reactive plasma.

4,282,268

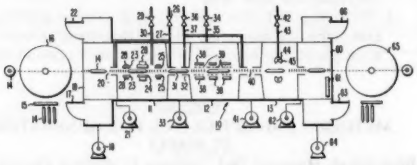
METHOD OF DEPOSITING A SILICON OXIDE DIELECTRIC LAYER

Eldon B. Priestley, East Windsor, and Patrick J. Call, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 793,641, May 4, 1977, abandoned. This application Jun. 6, 1978, Ser. No. 913,241

Int. Cl.[3] **B05D** *3/06*

U.S. Cl. 427—39 **8 Claims**



1. In a method for preparing a video disc comprising a substrate containing video information in the form of a surface relief pattern having a conductive layer thereon and dielectric layer thereover wherein the said dielectric layer is deposited by the steps comprising introducing the substrate into an evacuated chamber, introducing oxygen and a dielectric precursor into the chamber and activating the pecursor around the substrate by means of a glow discharge whereby a dielectric coating is deposited on the disc, wherein the improvement comprises preparing a silicon oxide dielectric layer wherein the dielectric precursor has the formula

wherein R_1 is selected from the group consisting of H and $—CH_3$, R_2 and R_3 are independently selected from the group consisting of H, $—CH_3$, $—OCH_3$ and $—OC_2H_5$ and R_4 is selected from the group consisting of $—OCH_3$ and $—OC_2H_5$ whereby a silicon oxide dielectric layer is deposited.

4,282,269

ELECTRONIC COMPONENT WITH RADIATION-HARDENABLE COATING

Michael F. Lucey, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jul. 14, 1980, Ser. No. 167,907

Int. Cl.[3] **B05D** *3/06*

U.S. Cl. 427—54.1 **18 Claims**

1. An electronic component having a coating of an ultraviolet radiation-curable composition containing a borate to increase the cure rate and the thickness of the coating, said coating cured by exposure to ultraviolet light.

10. A process of coating an electronic component comprising blending ultraviolet radiation-curable resin components with a borate to decrease cure time and to increase the thickness of the coating that can be cured, applying the resulting mixture to an electronic component as a coating, and then subjecting the coated component to exposure to ultraviolet radiation to cure said coating.

4,282,270

METHOD FOR FORMING AN INSULATING FILM LAYER OF SILICON OXYNITRIDE ON A SEMICONDUCTOR SUBSTRATE SURFACE

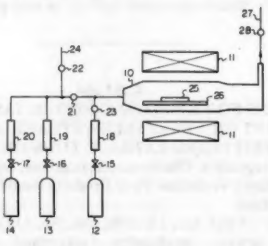
Takao Nozaki, Yokohama, and Takashi Ito, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 15, 1979, Ser. No. 84,570

Claims priority, application Japan, Oct. 27, 1978, 53/132310

Int. Cl.[3] **H01L** *21/316, 21/318*

U.S. Cl. 427—93 **13 Claims**



1. A method for forming an insulating film on a surface of a silicon semiconductor substrate with a relatively low density of surface defects between the substrate and insulating film, comprising directly converting a surface portion of the silicon substrate into an insulating film layer comprising silicon oxynitride by bringing a cleaned surface of said silicon substrate into

contact with an atmosphere consisting essentially of an ammonia gas and an oxygen-containing substance gas at an elevated temperature, said oxygen-containing substance gas having a volume concentration, in terms of molecular oxygen, of from 10^2 to 10^4 ppm.

4,282,271

DISPERSIONS FOR ACTIVATING NON-CONDUCTORS FOR ELECTROLESS PLATING

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 934,344, Aug. 17, 1978, Pat. No. 4,220,678, which is a division of Ser. No. 830,456, Sep. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 731,212, Oct. 12, 1976, Pat. No. 4,136,216, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Jul. 11, 1979, Ser. No. 56,622

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—98 **39 Claims**

1. A process for the electroless plating of a non-conductor substrate which comprises

(a) immersing said substrate into a colloidal dispersion of at least one non-precious catalytic metal capable of electroless plating initiation and an antioxidant capable of decreasing the surface oxidation of said catalytic metal when contacted with water and/or air and further wherein said antioxidant is incapable of reducing ions of said catalytic metal to the metallic state; and

(b) immersing said treated substrate into an electroless plating bath to deposit a metallic coating.

4,282,272

METHOD FOR FORMING ELECTROCHROMIC FILM

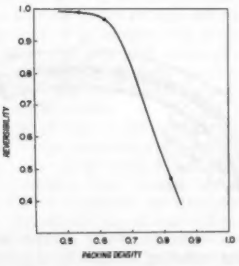
Kenzi Matsuhiro, Sagamihara, and Yasushi Masuda, Yamato, both of Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,651

Claims priority, application Japan, Jun. 9, 1978, 53-68764

Int. Cl.³ B05D *5/12*; G02F *1/01*

U.S. Cl. 427—126.3 **7 Claims**



1. A process for forming an amorphous electrochromic film upon a substrate having an electrode which comprises carrying out a vacuum evaporation and deposition of electrochromic material under a pressure of 2×10^{-4} to 2×10^{-3} torr upon said substrate having an electrode to provide an electrochromic film, and then, carrying out a heat-treatment.

4,282,273

PROCESS AND APPARATUS FOR GALVANIZING A WIRE

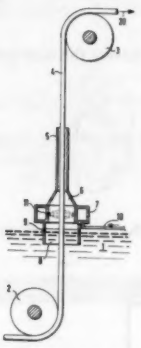
Werner Bücker, Düsseldorf, and Christian Rademacher, Neuss, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,194

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815485

Int. Cl.³ B05D *3/00*

U.S. Cl. 427—398.3 **9 Claims**



1. In a process for galvanizing a workpiece wherein the workpiece vertically leaves a zinc bath and the adhering liquid zinc forms the zinc layer after its solidification, the improvement being rapidly cooling the surface of the workpiece in a shock-type manner immediately after it leaves the zinc bath by means of a low boiling liquified gas cooling agent without any high temperature gas being applied to the workpiece in the time period between the workpiece leaving the zinc bath and the low boiling liquified gas being applied to the workpiece.

4,282,274

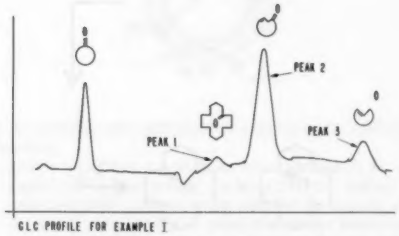
ORGANOLEPTIC USES OF 2- AND 3-CYCLOTETRADECEN-1-ONES

Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Manfred H. Vock, Locust; Domenick Luccarelli, Jr., Ocean; Frederick L. Schmitt, Holmdel; Gilbert Stork, Englewood, all of N.J.; Timothy MacDonald, Nashville, Tenn., and Arthur L. Lieberman, Highlands, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 973,093, Dec. 26, 1978, Pat. No. 4,183,965. This application Jun. 27, 1979, Ser. No. 52,668

Int. Cl.³ C11D *17/04, 17/06*

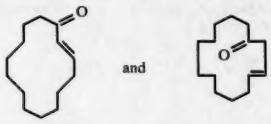
U.S. Cl. 427—402 **1 Claim**



GLC PROFILE FOR EXAMPLE I

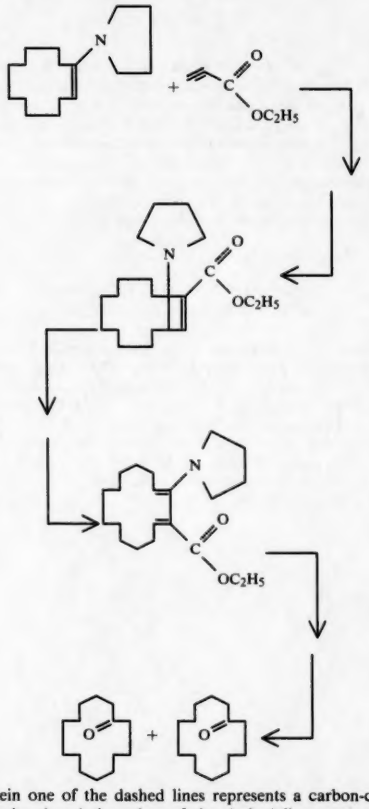
1. A process for augmenting or enhancing the aroma of a fabric softener article which fabric softener article comprising a paper or cloth substrate, a waxy, cationic or nonionic substrate coating material, and an outer coating consisting essen-

tially of a fabric softener composition, said process comprising the step of intimately admixing with said outer coating composition an aroma augmenting or enhancing quantity of a product which comprises a mixture of 2- and 3-cyclotetradecen-1-ones having the structures:



and cyclotetradecanone having the structure:

produced according to the process defined according to the reaction sequence:



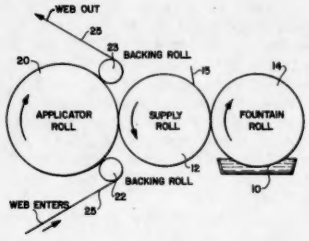
wherein one of the dashed lines represents a carbon-carbon single bond and the other of the dashed lines represents a carbon-carbon double bond, coating the substrate with the substrate coating and then coating the substrate coating with the outer coating comprising said product by process which contains the 2- and 3-cyclotetradecen-1-ones and the cyclotetradecanone.

4,282,275

COATING METHOD APPARATUS FOR CAPSULAR COATINGS

Charles E. Werner, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 14, 1980, Ser. No. 111,741
Int. Cl.³ B05D *1/28*
U.S. Cl. 427—428 **5 Claims**



1. A method for applying a fluid coating composition containing rupturable microcapsules, to an endless web, comprising:

(a) metering said coating composition onto the peripheral surface of a supply roll,

(b) transferring said metered composition to an applicator roll, and

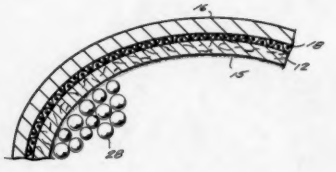
(c) passing the endless web around and in tensioned, substantially uncompressed contact with more than half of the surface of the applicator roll, and keeping the web in contact with the applicator roll for a time sufficient to substantially absorb said metered composition into the web to uniformly and evenly transfer said metered coating composition to the web without shearing the composition when on the web or mechanically pressing the solids therein into the web.

4,282,276

THERMAL INSULATION PACKET

Stuart B. Smith, 2069 Christian Cir., Conyers, Ga. 30207

Division of Ser. No. 937,133, Aug. 28, 1978, Pat. No. 4,214,418.
This application Dec. 10, 1979, Ser. No. 101,563
Int. Cl.³ B32B *1/02*; E04B *2/00*
U.S. Cl. 428—35 **2 Claims**



1. A thermal insulation packet comprising a completely closed container including an inner layer of flexible material, an outer imperforate layer of aluminum foil and an intermediate layer of fiberglass webbing disposed between said outer and inner layers, said layers being adhesively secured together, said inner layer having a fireretardant composition impregnated therethrough and a heat-activated adhesive coating on the interior surface thereof a portion of said interior surface overlaps and is secured to a portion of said outer layer by said

heat-activated coating, said container being filled with expanded foam pellets and a hydrate compound.

4,282,277

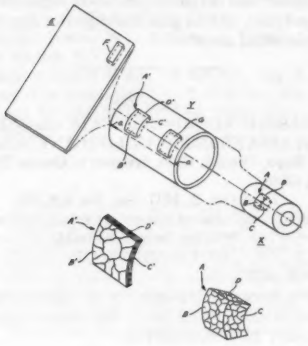
ORIENTED, SEMI-CRYSTALLINE POLYMER PRODUCT AND METHOD AND APPARATUS FOR PRODUCING SUCH PRODUCT

Alfred R. Austen, Center Valley, and Darral V. Humphries, Allentown, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 941,116, Sep. 8, 1978. This application Sep. 5, 1979, Ser. No. 72,807

Int. Cl.[3] **B29C** *23/00;* **F16L** *9/12;* **B32B** *27/06, 27/32*

U.S. Cl. 428—36 **65 Claims**



1. A rigid conduit having a substantially uniform wall thickness which does not vary circumferentially and axially by more than plus or minus 10 percent, and which is from about 0.5 percent to about 6.25 percent of the outside diameter, the thickness being not less than 0.079 centimeter (1/32 inch) in conduits having an outside diameter of between 2.54 centimeters (1 inch) and 7.62 centimeters (3 inches), comprising at least one layer of at least one oriented semi-crystalline thermoplastic polymer characterized by a density which is at least equal to the density of the unoriented polymer and by having a microstructure substantially devoid of process induced microvoids and microfibrils and comprised of radially compressed, discrete, platelet-like spherulitic crystalline aggregates which are oriented in the plane of the conduit wall; the conduit having a circumferential tensile impact strength at −45 C. (−50 F.) which is not less than 20 percent of its circumferential tensile impact strength at 24 C. (75 F.), and having a circumferential tensile impact strength at 24 C. which is at least five times and a circumferential ultimate tensile strength which is at least one and three quarters that of a corresponding conduit of the same polymer in an unoriented state and a ratio of tensile impact strength over ultimate tensile strength which is at least 50% greater than that ratio determined for a conventional biaxially oriented thermoplastic conduit.

25. A method for producing the conduit of claim **1** which comprises compressively extruding a preform of a substantially non-oriented semi-crystalline thermoplastic polymer in a solid state with a hydrostatic fluid through an extrusion zone whereby the preform is expanded and elongated substantially simultaneously circumferentially at least 100 percent and axially at least 50 percent to form a conduit, while lubricating the surface of the polymer with the hydrostatic fluid.

51. An article of manufacture comprised of at least one oriented semi-crystalline thermoplastic polymer having a thickness of not less than 0.079 centimeters in at least a portion of its contour which portion is characterized by having a microstructure comprised of spherulitic crystalline aggregates compressed transversely to the plane of the portion and biaxially oriented in the plane of the portion, said portion being substantially devoid of stretch oriented microvoids and microfibrils and having a density which is at least equal to the density of the non-oriented polymer and a tensile impact strength which is at least five times and an ultimate tensile strength which is at least 1¾ times that of the corresponding substantially non-oriented thermoplastic polymer melt, a tensile impace strength at −45 C. (−50 F.) which is not less than 20 percent of its tensile impact strength at 24 C. (75 F.), a ratio of tensile impact strength to ultimate tensile strength, determined by ASTM D1822 S-type specimens, is at least 50% greater than the same ratio determined for a conventional biaxially oriented semi-crystalline thermoplastic polymer of the same composition, which polymer has the same ultimate tensile strength level.

4,282,278

TRANSFERABLE FLOCKED FIBER STICKER MATERIAL

Shigehiko Higashiguchi, 3-4-2 Honjo, Sumida-ku, Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,093

Int. Cl.[3] **B05D** *1/14*

U.S. Cl. 428—90 **7 Claims**

1. A transferable flocked fiber sticker material formed of a base sheet selected from the group consisting of paper, cellophane, cloth and non-woven fabric, a release adhesive layer applied to one surface of said base sheet, fibers releasably flocked to said adhesive-applied surface of the base sheet, a hot melt resin adhesive mixture layer applied as a paste to the exposed ends of said releasably flocked fibers and said hot melt resin adhesive mixture containing at least one elasticity imparting agent.

4,282,279

FORMABLE REMOVABLE INSULATING ENCLOSURE FOR A CONTAINER

Robert D. Strickland, Santa Barbara, Calif., assignor to Rip 'n Rap, Inc., Santa Barbara, Calif.

Filed Oct. 16, 1979, Ser. No. 85,371

Int. Cl.[3] **B32B** *3/06;* **B65D** *75/00*

U.S. Cl. 428—101 **15 Claims**

1. A formable removable insulating enclosure for a container comprising

a pliable elongated covering member adapted to be positioned and formed around the exterior outer surface of a said container, said covering member having an outer layer which terminates in opposed ends and wherein said outer layer of the covering member is formed of two separate protective layers which are joined around the periphery thereof, a width substantially equal to the height of a said container to be enclosed thereby and a length which is greater than the geometrical dimension

around the periphery of the exterior outer surface of a said container so as to enable the edge of one of the opposed ends of the covering member to contact and overlap with the edge of the other end of the covering member when the covering member is positioned and formed around a said container;

a resilient insulating layer enclosed by the outer layer of said covering member, said insulating layer being adapted to be formed around the periphery of a said container together with the outer layer of the covering member;

a first fastening means located on one edge of a selected end of the covering member and extending substantially along the width thereof and positioned to be located in a plane substantially parallel to and spaced from the periphery of the exterior outer surface of a said container; and

a second fastening means adapted to make removable locking engagement with the first fastening means, said second fastening means being located on the edge of the other end of the covering member and extending substantially along the width thereof and positioned to be located in a plane substantially parallel to said first fastening means;

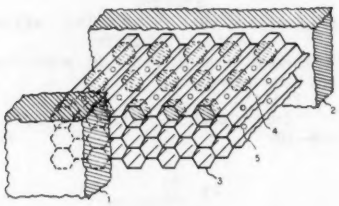
said covering member being adapted to be positioned and formed around the exterior outer surface of the container and to be pulled tightly therearound to cause the covering member to be intimately engaged with the exterior outer surface of a said container such that said pair of fastening means engage and cooperate with each other to hold said covering member in a tight snug fitting relationship around a said container to insulate the same from the environment.

4,282,280

HEAT INSULATION FOR TANKS AT CRYOGENIC AND HIGHER TEMPERATURES, USING STRUCTURAL HONEYCOMB WITH INTEGRAL HEAT RADIATION SHIELDS

William H. Cook, Jr., 875 SE. Shoreland Dr., Bellevue, Wash. 98004

Filed Dec. 30, 1976, Ser. No. 755,818
Int. Cl.[3] B31D *3/02*
U.S. Cl. 428—116 **3 Claims**



1. Heat insulation for tanks at cryogenic and higher temperatures, using structural honeycomb with integral heat radiation shields, comprising structural honeycomb with multiple low emissivity radiation shields, located within each cell of the honeycomb, each radiation shield filling a transverse cross section of the cell, and separated from adjacent heat radiation shields and also separated from inner and outer walls adjacent the honeycomb open spaces.

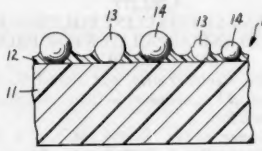
4,282,281

LONG-LIVED HEAVY-DUTY PAVEMENT MARKING

John L. Ethen, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 2, 1979, Ser. No. 90,571
Int. Cl.[3] B32B *5/16, 27/20*
U.S. Cl. 428—149 **10 Claims**

1. Pavement-marking sheet material comprising (a) a polymer-based sheet that is about one-fourth millimeter or more thick and that comprises (i) at least 8 weight-percent of an unvulcanized acrylonitrile-butadiene polymer carrying carboxyl groups in an amount of at least 2 weight-percent based on the weight



of the polymer, and (ii) particulate fillers dispersed in mixture with the polymer, and (b) glass microspheres dispersed within the polymer-based sheet.

4,282,282

BARIUM ALUMINOSILICATE GLASSES, GLASS-CERAMICS AND DOPANT HOST

James E. Rapp, Oregon, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 3, 1977, Ser. No. 838,786
The portion of the term of this patent subsequent to Dec. 21, 1993, has been disclaimed.
Int. Cl.[3] H01L *21/223*
U.S. Cl. 428—220 **6 Claims**

1. A glass thermally crystallizable to a glass-ceramic body, which glass is substantially free of alkai metal oxides and consists essentially of, in mole percent:

Component	Mole Percent
SiO_2	45–52
Al_2O_3	18.5–22.5
B_2O_3	20–25
MgO	2.5–4.5
BaO	3.5–5.5

with the following molar ratios:

$SiO_2/Al_2O_3 > 2.1$

$SiO_2/B_2O_3 < 2.3$

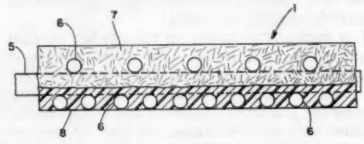
$Al_2O_3/(MgO+BaO)$ 2.1–3.1

4,282,283

LAMINATED FIBERGLASS FABRIC

Stephen George, and Thomas H. George, both of Bronx, N.Y., assignors to Textured Products, Inc., Hartsdale, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,835
Int. Cl.[3] B32B *17/06, 7/04, 7/12*
U.S. Cl. 428—228 **29 Claims**



1. A laminated fiberglass fabric composition comprising:

(a) a porous fabric comprising fiberglass yarn,

(b) a plastisol laminating adhesive formed on the upper and lower surfaces of said fiberglass fabric, and

(c) a non-woven fabric laminated to one of the surfaces of said fiberglass fabric by said adhesive, said non-woven fabric having been compressed into said fiberglass fabric

so as to envelop the yarn of the fiberglass fabric with non-woven fabric.

4,282,284

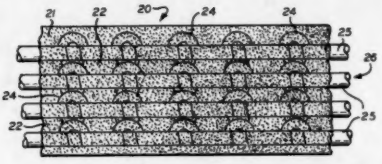
FLAME AND HEAT RESISTANT ELECTRICAL INSULATING TAPE

Stephen George, Bronx, N.Y., assignor to Textured Products, Inc., Mt. Vernon, N.Y.

Continuation-in-part of Ser. No. 931,121, Aug. 4, 1978, abandoned. This application Sep. 7, 1979, Ser. No. 73,362

Int. Cl.³ B32B *7/00, 17/06;* **D02G** *3/00*

U.S. Cl. 428—251 **7 Claims**



1. A heat resistant, flexible, refractory, electrical insulating tape comprising:

(a) a porous base fabric;

(b) a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said fabric by applying said refractory coating to both sides of said fabric and said refractory materials being capable of fusing with the porous base fabric at elevated temperatures;

(c) an abrasion resistant polymeric coating formed on the outside surface of one of the refractory coatings, and

(d) an adhesive formed on the outside surface of the other refractory coating.

2. A heat resistant, flexible, refractory electrical insulating tape comprising:

(a) a porous base fabric;

(b) a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said fabric by applying said refractory coating to both sides of said fabric and said refractory materials being capable of fusing with the porous base fabric at elevated temperatures;

(c) an abrasion resistant polymeric coating formed on the outside surface of both of the refractory coatings, and

(d) an adhesive formed on the surface of one of the polymeric coatings.

3. A heat resistant, flexible, refractory, electrical insulating tape comprising:

(a) a porous base fabric;

(b) a refractory coating comprising refractory materials and a bonding agent, said refractory coating formed on the surface and interstices of said fabric with said refractory materials being capable of fusing with the porous base fabric at elevated temperatures; and

(c) an abrasion resistant polymeric coating comprising polyvinyl chloride formed on the outside surface of said refractory coating.

4,282,285

PROCESS FOR PREPARING POLYURETHANE MOLDED PART

Gulam Mohiuddin, Brighton, Mich., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 87,768, Oct. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 38,505, May 14, 1979, abandoned. This application May 15, 1980, Ser. No. 149,996

Int. Cl.³ B29D *27/00;* **B32B** *5/20, 5/14*

U.S. Cl. 428—315 **16 Claims**

15. In a process for producing a microcellular molded polyurethane part having an integral skin thereon by reaction injection molding in which the polyurethane reactants are mixed to form a liquid mixture, the mixture is fed to a metal surface mold where the mixture is reacted and molded at elevated temperatures and a shaped part is removed from said mold, the improvement comprising coating the surface of said mold, prior to molding said part and without the use of a release agent, with a paint composition containing from 0.05 to 10% by weight of the paint composition of a polyurethane catalyst, said catalyst acting as a catalyst for said polyurethane part but not for said paint composition, and molding said part while simultaneously transferring said paint composition from said mold surface and bonding it to said molded part, said process producing an integral skin microcellular shaped polyurethane part having a firmly adherent paint coating thereon.

16. A reaction injection molded microcellular polyurethane part having an integral skin and a firmly adherent uniform paint coating thereon, said part being produced in accordance with the process of claim **15**.

4,282,286

PROCESS FOR MAKING DESTRUCTIBLE MARKING FILM AND METHOD FOR MARKING

Masao Sahara, Uozu, Japan, assignor to Nippon Carbide Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 952,134, Oct. 17, 1978. This application Dec. 3, 1979, Ser. No. 99,717

Int. Cl.³ B32B *27/20, 27/30, 31/04, 31/12*

U.S. Cl. 428—339 **4 Claims**

4. A method for marking, which comprises applying to the surface of a substrate a destructible film having a thickness of about 30 to about 60 microns and a destructibility of not more than 60 kg.cm/mm, said film consisting essentially of

(A) 100 parts by weight of a vinyl chloride resin having a degree of polymerization of about 600 to about 2000 and containing 0 to about 5% by weight of a comonomer unit,

(B) about 5 to about 20 parts by weight of an alkyl methacrylate resin, which is a blend of an alkyl methacrylate polymer with an alkyl group containing 1 to 3 carbon atoms and an alkyl methacrylate polymer with an alkyl group containing 4 to 10 carbon atoms, or a copolymer of an alkyl methacrylate with an alkyl group containing 1 to 3 carbon atoms and an alkyl methacrylate with an alkyl group containing 4 to 10 carbon atoms,

(C) about 5 to about 30 parts by weight of a liquid stabilizer, and

(D) about 10 to about 150 parts by weight of a pigment.

4,282,287

BIOCHEMICAL AVIDIN-BIOTIN MULTIPLE-LAYER SYSTEM

Roger W. Giese, 56 Oakland Ave., Quincy, Mass. 02170

Filed Jan. 24, 1980, Ser. No. 114,898

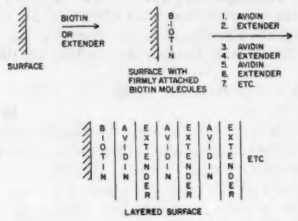
Int. Cl.³ B32B *5/16, 9/00*

U.S. Cl. 428—407 **28 Claims**

1. A process of modifying the surface properties of a surface, which process comprises:

applying alternative, monomolecular, successive layers of first and and second materials to a surface to be modified, the first material comprising avidin and the second mate-

rial comprising a noncovalent, biotin-modified extender, one of the materials reacted to the surface, and, thereafter, at least one additional layer of each of the first and second



materials alternated, secured and reacted to the underlying layer, to provide a surface with the first or second material as the top surface layer thereon.

19. The layering system produced by the process of claim 1.

4,282,288

GRAPHITE REFRACTORY ARTICLE HAVING DENSE STRUCTURE WITH LOW POROSITY

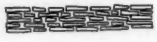
Shigeo Yoshino; Tadashi Zenbutsu; Hajime Asami, all of Bizen, and Miki Suma, Niiza, all of Japan, assignors to Shinagawa Shirorenga Kabushiki Kaisha and Toshin Seiko Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,487

Claims priority, application Japan, Dec. 5, 1978, 53-149661

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—408 **7 Claims**



1. A graphite refractory article having a dense structure with a low porosity, which has a chemical composition consisting essentially of:

100 wt. parts of natural flake graphite, as the carbonaceous raw material, comprising at least 70 wt.% flake graphite having a particle size within the range of from 0.1 to 3 mm and up to 30 wt.% flake graphite having a particle size of under 0.1 mm;

from 4 to 10 wt. parts of powdery phenol resin as the binder; and

incidental impurities;

said graphite refractory article being obtained by press-forming a dry mixture having said chemical composition under a forming pressure of from 700 to 2,000 kg/cm^2 applied in one direction to prepare a formed body, and heating the resultant formed body; and,

said graphite refractory article being imparted, through said press forming and said heating, a structure in which the flakes of said flake graphite are orderly arranged in substantially one direction into layers, and an apparent porosity of up to 15%.

4,282,289

METHOD OF PREPARING COATED CEMENTED CARBIDE PRODUCT AND RESULTING PRODUCT

Gregor H. Kullander, Älvsjö; Christopher G. Chatfield, Stockholm; Marian Mikus, Skärholmen, and Bo K. Westergren, Hägersten, all of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Apr. 16, 1980, Ser. No. 140,804

Int. Cl.³ C23C *11/08*

U.S. Cl. 428—457 **6 Claims**

1. Method of treating a cemented carbide substrate containing at least one carbide together with binder metal in order to improve its wear resistance and utility, which method consists essentially of:

(a) treating the substrate in an atmosphere selected from carbide, nitride and carbonitride forming atmospheres to form or apply a coating essentially consisting of at least one coat of at least one member selected from the group consisting of carbides, nitrides and carbonitrides of the elements Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Si and B;

(b) adding a sulfur-and/or nitrogen containing gas at the end of or at a period during the treatment of step (a) to form a sulfide and/or nitride portion on said coating; and

(c) applying a wear resistant oxide coating on the thus pre-treated cemented carbide substrate.

4,282,290

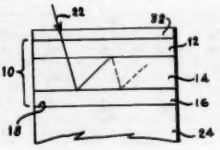
HIGH ABSORPTION COATING

Samuel F. Pellicori, Santa Barbara, Calif., and Milton H. Monnier, Beaverton, Oreg., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 23, 1980, Ser. No. 114,541

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—472 **1 Claim**



1. A multilayer coating system for the absorption of infrared energy and particularly adapted for application to a sapphire substrate which consists essentially of:

(A) A vacuum deposited, opaque, first layer of titanium about 2000 to 3000 Å in thickness;

(B) A vacuum deposited, semitransparent, third layer of titanium about 140 Å in thickness;

(C) A vacuum deposited, dielectric, second layer of aluminum oxide about one quarter wave optical thickness at 2.8 micrometers positioned between and in contact with said first and third layers; and

(D) a vacuum deposited, dielectric, fourth layer superposed on said third layer.

4,282,291

DUCTILE CHROMIUM-CONTAINING FERRITIC ALLOYS

Joseph J. Demo, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 718,680, Aug. 30, 1976, abandoned, which is a division of Ser. No. 575,403, May 7, 1975, Pat. No. 3,992,198, which is a continuation-in-part of Ser. No. 371,951, Jun. 21, 1973, abandoned, which is a continuation-in-part of Ser. No. 153,259, Jun. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 51,283, Jun. 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 886,620, Dec. 19, 1969, abandoned, which is a continuation-in-part of Ser. No. 847,296, Aug. 4, 1969, abandoned. This application Jul. 14, 1977, Ser. No. 815,671

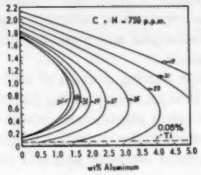
The portion of the term of this patent subsequent to May 18, 1993, has been disclaimed.

Int. Cl.³ B32B *15/18*

U.S. Cl. 428—683 **4 Claims**

1. A ferritic stainless steel welded article with high resistance to chloride stress corrosion cracking and high resistance to intergranular corrosion in combination with good weld formability, said welded article consisting essentially of, in

weight percent, a sum of carbon and nitrogen content above 0.025 but below 0.075; up to 0.8 manganese; up to 0.5 silicon; 19



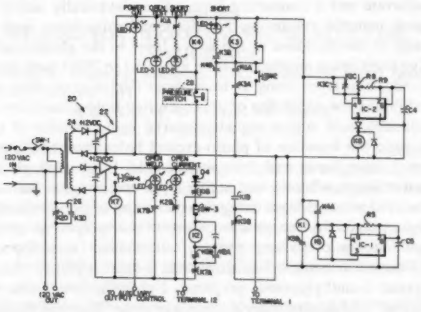
to 35 chromium; up to 1.5 molybdenum; 0.05 to 2.20 titanium, and the balance iron and incidental impurities, said welded article having good as-welded ductility.

4,282,292

OPEN AND SHORT CIRCUIT TEST METHOD

Jimmy L. Stewart, Frankfort, Ind., assignor to General Battery Corporation, Reading, Pa.

Filed Dec. 31, 1979, Ser. No. 108,470
Int. Cl.³ H01M *10/48*
U.S. Cl. 429—93 **6 Claims**



1. For a multicelled lead-acid storage battery, wherein each cell is comprised of a plurality of interleaved positive and negative plates, said plates having upstanding lugs on their top sides arranged so that each positive lug is along one side of said cell and each negative lug is along an opposite side of said cell, wherein all of said positive lugs are connected by a first conductive strap having a connector lug welded thereto and all of said negative lugs are connected by a second conductive strap having a connector lug welded thereto, said cells being alternately arranged within said battery so that the first conductive strap lug of one cell is adjacent to a second conductive strap lug in an adjoining cell, said cells being connected in series by welding together a first strap lug in one cell to the second strap lug in the adjoining cell, and further said battery comprising an external terminal at each end of said series, the method of testing the battery for short circuits between plates of opposite polarity within a cell and for electrical continuity between the cells of said battery, comprising:

(a) forming a series electrical connection first with the positive and negative strap lugs along one side of said battery and then with the positive and negative strap lugs along the opposite side of said battery;

(b) isolating the strap lugs along one side of the battery from those along the other side by breaking said series connection more or less in the middle;

(c) directing a voltage into one side of said broken series connection;

(d) monitoring the lugs on the other side of said series connection for a current flow, said flow indicating the presence of a short circuit between plates of opposite polarity in one or more cells;

(e) reconnecting both sides of said series;

(f) directing a positive voltage into one end of the reconnected series connection;

(g) monitoring the opposite end of said series connection for the absence of a current flow said absence indicating the occurrance of one or more open intercell welds in the battery.

4,282,293

SEALS FOR ELECTROCHEMICAL CELLS

Johannes A. van Lier, Cleveland, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 24, 1980, Ser. No. 162,588
Int. Cl.³ H01M *2/08*
U.S. Cl. 429—185 **10 Claims**

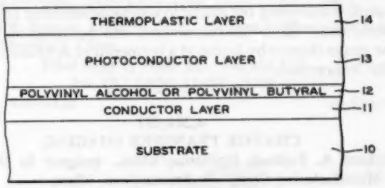
1. A sealed electrochemical cell comprising a cathodic material, an anodic material and an alkaline electrolyte housed in a cupped container sealed at its open end by a closure means, said closure means comprising a cover and a nonconductive gasket having at least one layer selected from the group consisting of a polyamide, an epoxy resin, asphalt and a cured epoxypolyamide resin, said coated gasket disposed and compressed between the interface of the cover and the container; the improvement being a film of a substituted organosilane disposed on the edge surface of the cover between the cover and the coated gasket interface thereby forming a fluid-tight seal therebetween.

4,282,294

POLYVINYL BLOCKING LAYER FOR PREVENTING CHARGE INJECTION IN A THERMOPLASTIC PHOTOCONDUCTIVE DEVICE FOR HOLOGRAPHY

Tzuo-Chang Lee, Bloomington, and John D. Skogen, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1980, Ser. No. 194,493
Int. Cl.³ G03G *5/14*; G03H *1/02*
U.S. Cl. 430—1 **6 Claims**



1. An improved thermoplastic holographic recording medium having a charge injection inhibiting layer to inhibit unwanted charge injection, comprising in sequence:

a substrate coated with an electrically conductive layer;

a charge injection inhibiting layer selected from a group consisting of polyvinyl alcohol and polyvinyl butyral and mixtures thereof on the electrically conductive layer;

a photoconductive layer on the inhibiting layer, and;

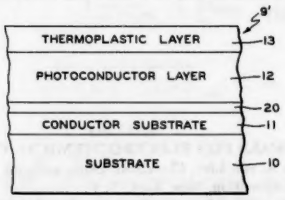
a thermoplastic layer over the photoconductive layer, whereby the inhibiting layer prevents unwanted charge injection at the conductor-photoconductor interface.

4,282,295

ELEMENT FOR THERMOPLASTIC RECORDING

Tzuo-Chang Lee, and Jacob W. Lin, both of Bloomington, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 6, 1979, Ser. No. 64,271
Int. Cl.[3] G03C *16/00*
U.S. Cl. 430—2 6 Claims



1. A thermoplastic-photoconductive holographic recording medium comprising:

an electrically conductive thin nickel-chromium (NiCr) layer thin enough to be transparent at the operating wavelength coated on a substrate;

an extremely thin oxide layer relative to the NiCr layer such as a mono layer over said NiCr layer wherein the thickness of the oxide mono layer is about 1–10 A°;

a photoconductive layer on the oxide mono-layer; and,

a thermoplastic layer coated over said photoconductive layer.

4,282,296

HIGH SPEED MAGNETOGRAPHIC IMAGING PROCESS

Cornelius B. Murphy, and Donald S. Sypula, both of Fairport, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 30, 1980, Ser. No. 145,172
Int. Cl.[3] G03G *19/00*
U.S. Cl. 430—39 5 Claims

1. A method for developing magnetic latent images comprising forming a magnetic latent image on a suitable substrate, contacting the image with a dry magnetic toner consisting essentially of about 25 percent to about 50 percent by weight of a resin of a polymeric esterification product of 1,4-benzene dicarboxylic acid polymerized with 1,2,4-benzene-tricarboxylic acid-cyclic 1,2-anhydride and 2,2-dimethyl-1,3-propane diol, and from about 50 percent to about 75 percent by weight of a magnetic material selected from magnetites, metals, metal oxides, ferrites, and alloy materials, said toner having a fusing temperature of from about 300° Fahrenheit to about 390° Fahrenheit, transferring the image to a suitable substrate at a rate of above about 20 inches per second, and permanently affixing the image thereto by fusing at a temperature in excess of about 300° Fahrenheit.

4,282,297

CHARGE TRANSFER IMAGING

Richard A. Fotland, Holliston, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 969,516, Dec. 14, 1978, which is a continuation-in-part of Ser. No. 816,012, Jul. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 807,451, Jun. 17, 1977, abandoned. This application Apr. 14, 1980, Ser. No. 139,959
Int. Cl.[3] G03G *13/18*
U.S. Cl. 430—48 5 Claims

1. An electrophotographic method comprising the steps of uniformly charging a photoconductive surface layer of a photoreceptor assembly, which photoreceptor assembly comprises the photoconductive surface layer, a conducting substrate, and a semiconductor layer having a thickness of at least 1 mil and a resistivity between 10^3 and 10^{12} ohm centimeters, interposed between said photoconductive surface layer and said conducting substrate;

exposing the uniformly charged photoconductive surface layer to a pattern of light and shadow representing an original to be reproduced, whereby the surface layer is selectively discharged and a latent electrostatic image is produced thereon;

moving the image bearing portion of said photoconductive surface layer into proximity with a dielectric member; and

transferring the latent electrostatic image to said dielectric member by means of the ionization of air in a gap between said photoreceptor assembly and said dielectric member.

4,282,298

LAYERED IMAGING MEMBER AND METHOD

Michael Smith, Rochester; Charles F. Hackett, Williamson, and Richard W. Radler, Marion, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 94,139, Dec. 1, 1970, which is a continuation-in-part of Ser. No. 14,280, Feb. 26, 1970, abandoned. This application Jun. 20, 1973, Ser. No. 371,647
Int. Cl.[3] G03G *5/08, 5/14*
U.S. Cl. 430—58 25 Claims

1. An imaging member comprising a layer of unoriented inorganic photoconductive material contained on a supporting substrate and a contacting layer of an electrically active organic material overlaying the photoconductive layer, with the ratio of the thickness of the active layer to the photoconductive layer being maintained from about 2:1 to 200:1, said photoconductive layer being at least about 0.05 micron thick and exhibiting the capability of photo-excited hole generation and injection, said active organic material being capable of supporting the injection of photo-excited holes from said photoconductive layer and transporting said holes through said active layer, wherein said active layer comprises at least one material selected from the group consisting of poly-1-vinylpyrene, polymethylene pyrene, N-substituted polymeric acrylic acid amides of pyrene, pyrene, tetraphene, 1-acetylpyrene, 2,3-benzochrysene, 6,7-benzopyrene, 1-bromopyrene, 1-ethylpyrene 1-methylpyrene, perylene, 2-phenylindole, tetracene, picene, 1,3,6,8-tetraphenylpyrene, chrysene, fluorene, fluorenone, phenanthrene, triphenylene, 1,2,5,6-debanzanthracene, 1,2,3,4-dibenzanthracene, 2,3-benzopyrene, 2,3-benzochrysene, anthraquinone, dibenzothiophene, and naphthalene.

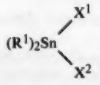
4,282,299

PHOTOCONDUCTIVE RECORDING MATERIAL CONTAINING A ZINC OXIDE PARTICLE AND A METALLIC MERCAPTO COMPOUND

Andre R. Suys, Hove, and Hendrik H. Sneyers, Wijnegem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Sep. 7, 1978, Ser. No. 940,311
Claims priority, application United Kingdom, Sep. 13, 1977, 38164/77
Int. Cl.[3] G03G *5/08*
U.S. Cl. 430—89 7 Claims

1. An electrophotographic recording material comprising a photoconductive layer containing photoconductive zinc oxide particles dispersed in a binder, some or all of which particles are in contact and/or in reacted form with at least one organic compound within the scope of the following general formulae (A), (B) and (C):



(A)

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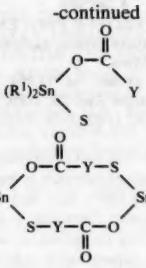


(B)

(C)

wherein:

R^1 represents an alkyl group including an aromatically substituted alkyl group,

each of X^1 and X^2, which may be the same or different, represents a —S—R^3 group wherein R^3 represents an alkyl group or a substituted alkyl group, and

Y represents an alkylene group,

the amount of said organic compound present in said layer being sufficient to significantly improve the charge retention of said material in the dark and under conditions of high humidity.

4,282,300

METHOD FOR DIAZO COPYING OF BLUE LINE ORIGINALS

Howard W. Wegener, Amherst, N.H., assignor to Eliott Industries, Nashua, N.H.

Filed Dec. 4, 1978, Ser. No. 966,347

Int. Cl.³ G03C *5/02, 5/18*

U.S. Cl. 430—146 **5 Claims**

1. A diazo process for copying a blue line original having blue line image areas having light absorption range of about 4600–5900 Angstroms comprising the steps of:

placing the blue line original and a diazo copy sheet in light exposing relationship for imaging of the blue line image areas of the original onto the photosensitive surface of the diazo copy sheet;

providing a light source having an emission spectrum which is absorbed by the blue line image areas of the original and which is actinic to the photosensitive surface of the copy sheet;

exposing the photosensitive surface of the copy sheet to image-wise exposure by said emission spectrum;

removing from the emission spectrum prior to exposure of the photosensitive surface of the copy sheet any wavelengths of light which are transmissive through said blue line image areas of the original and which are capable of exposing the copy sheet by filtering the emission spectrum of the light source to pass only the portion of the emission spectrum within said light absorption band of the blue line image areas of the original; and

developing the copy sheet to provide a visible azo dye rendition of the original blue line image.

4,282,301

PHOTOSENSITIVE DIAZO COATING COMPOSITIONS AND PLATES

Takatoshi Ohta, Warabi, Japan, assignor to Okamoto Chemical Industry Corporation, Japan

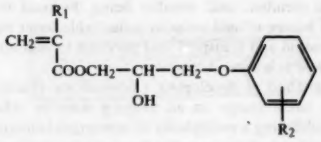
Continuation-in-part of Ser. No. 969,844, Dec. 15, 1978, abandoned. This application Jul. 3, 1979, Ser. No. 54,485

Claims priority, application Japan, Dec. 21, 1977, 52/154112

Int. Cl.³ G03C *1/60, 1/71*

U.S. Cl. 430—175 **7 Claims**

1. A photosensitive coating composition for negative printing plates, comprising a mixture containing from 50% to 95% by weight of a copolymer, prepared by polymerizing from 10 to 70% by weight of a monomer (A) having the general formula:



in which R_1 and R_2 are hydrogen atoms or alkyl groups having 1 or 2 carbon atoms, with from 30 to 90% by weight of at least one monomer (B) selected from the group consisting of methyl methacrylate, methacrylic acid, acrylonitrile, and 2-hydroxylethyl methacrylate; in admixture with from 5% to 50% by weight of a diazo resin which is a condensation product of a diazoarylamine and an aldehyde.

4,282,302

FERRITE POWDER TYPE MAGNETIC TONER USED IN ELECTROPHOTOGRAPHY AND PROCESS FOR PRODUCING THE SAME

Motohiko Makino; Kenji Imamura, and Yoshinori Kurosawa, all of Tokyo, Japan, assignors to TDK Electronics, Ltd., Tokyo, Japan

Filed Oct. 22, 1979, Ser. No. 87,044

Claims priority, application Japan, Oct. 27, 1978, 53/132368

Int. Cl.³ G03G *9/00;* **C04B** *35/04;* **C01G** *49/08;* **C04B** *35/26*

U.S. Cl. 430—107 **7 Claims**

1. A one-component ferrite powder type magnetic toner for use in electrophotography comprising toner particles having an average particle diameter of 5 to 40μ, wherein each of said toner particles comprises a resinous component suitable for electrophotographic development and ferrite powder particles therein, the particles of the ferrite powder having an average particle diameter of 0.2 to 0.8μ, the ferrite having a spinel structure comprising components of iron oxide at a ratio of 99.9 to 51 mole % as Fe_2O_3 and at least one metal oxide selected from the group consisting of manganese oxide, nickel oxide, cobalt oxide, magnesium oxide, copper oxide, zinc oxide and cadmium oxide at a ratio of 0.1 to 49 mole % as MO wherein M represents Mn, Ni, Co, Mg, Cu, Zn or Cd, and wherein said ferrite powder is incorporated at a ratio of 0.2 to 0.7 wt. parts to 1 wt. part of said resinous component in said toner particles.

4,282,303

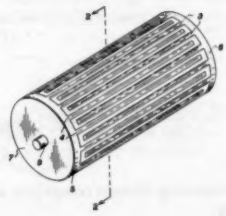
DEVELOPMENT METHOD AND APPARATUS

Richard F. Bergen, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 5, 1980, Ser. No. 146,953

Int. Cl.³ G03G *13/08, 15/08*

U.S. Cl. 430—120 **20 Claims**



1. In an apparatus employing polar or polarizable toner particles for the development of a nonuniform electrostatic or magnetic latent image, a development means comprising a

movable insulating member disposed in close proximity to said latent image, said member supporting an electrode means for establishing on the member convergent fields extending out from said member, said member being disposed to directly contact a source of said polar or polarizable toner particles in a first location and transport said particles to said nonuniform latent image in a second location.

14. A method of developing a nonuniform electrostatic or magnetic latent image on an imaging member which comprises, establishing a multiplicity of convergent electrical fields on a movable insulating member bearing electrical conductors, directly contacting a source of polar or polarizable toner particles with the insulating member and moving the insulating member through a path that brings the toner particles attracted by the convergent electrical fields into close proximity with the nonuniform latent image, said toner particles exhibiting paramagnetic properties when said nonuniform latent image is magnetic.

4,282,304

METHOD OF FORMING MAGNETIC TONER PARTICLES HAVING A CONCENTRATION OF MAGNETIC PARTICLES GREATER THAN 45 PERCENT BY WEIGHT BY DISPERSION POLYMERIZATION TECHNIQUES

Robert D. Bayley, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1979, Ser. No. 117,935
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—137 **9 Claims**

1. A method of making magnetic toner particles by a dispersion polymerization technique comprising dispersing magnetic particles and a polymerization initiator in a vinyl monomer, sizing the monomer by forming a suspension of toner size droplets in an aqueous medium containing a stabilizing agent, removing monomer from the sized droplets subsequent to formation of the suspension whereby the concentration of magnetic particles in the polymerized particles is increased to greater than 45 percent by weight and separating the polymerized particles from the reaction mixture.

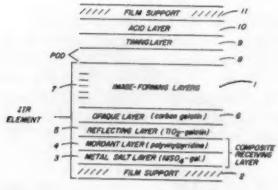
2. The method of claim **1** wherein the monomer is removed from the sized droplets, prior to the polymerizing step.

4,282,305

RECEIVING ELEMENTS FOR IMAGE TRANSFER FILM UNITS

David P. Brust; Lewis R. Hamilton, and Glenn R. Wilkes, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,169
Int. Cl.³ G03C *1/40, 5/54*
U.S. Cl. 430—213 **25 Claims**



1. An image receiving element comprising a support having thereon in order:

(1) a layer comprising a source of metal ions; and

(2) a dye-image receiving layer wherein the dye-image receiving layer comprises a homopolymer of vinylimidazole.

4,282,306

DYE DEVELOPER PROCESSES

Ronald F. Lambert, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 32,954, Apr. 24, 1979, abandoned. This application Apr. 24, 1980, Ser. No. 143,283
Int. Cl.³ G03C *1/40, 5/54, 7/00, 5/30*
U.S. Cl. 430—218 **21 Claims**

11. A diffusion transfer film unit comprising a photosensitive element comprising a support carrying at least one photosensitive silver halide emulsion layer, each said silver halide emulsion layer having associated therewith a dye developer; an aqueous alkaline processing composition; an image-receiving layer in superposed or superposable relationship with said silver halide emulsion layer(s); said film unit including a 5- or 6-membered aromatic unsaturated heterocyclic diazole free of imino nitrogen atoms, said diazole being a liquid at room temperature.

4,282,307

METHOD FOR FORMING NOBLE METAL SILVER PRECIPITATING NUCLEI

Alan H. Bruder, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 1, 1979, Ser. No. 80,692
Int. Cl.³ G03C *1/48, 5/54;* F01C *21/16;* F03C *3/00*
U.S. Cl. 430—232 **14 Claims**

1. A method for forming noble metal silver-precipitating nuclei which comprises the steps of

(a) forming an aqueous solution of a stannous salt;

(b) contacting said solution with potassium, sodium or ammonium dichromate to partially oxidize said stannous ion; and

(c) adding a noble metal salt or complex.

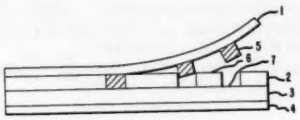
8. The method of claim **1** which includes the step of coating said nuclei on a support.

4,282,308

NEGATIVE-WORKING MULTILAYER PHOTOSENSITIVE ELEMENT

Abraham B. Cohen, Springfield, and Roxy N. Fan, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 105,648, Dec. 20, 1979, which is a continuation-in-part of Ser. No. 747,025, Dec. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 583,456, Jun. 3, 1975, abandoned. This application Jun. 26, 1980, Ser. No. 163,098
Int. Cl.³ G03C *1/76*
U.S. Cl. 430—271 **15 Claims**



1. A peel apart photosensitive element comprising in order from top to bottom, (1) a strippable cover sheet comprised of a polymeric film which is transparent to actinic radiation, (2) a photoadherent layer containing a colorant and comprising a photohardenable material with ethylenically unsaturated or benzophenone type groups, (3) a nonphotosensitive organic contiguous layer, and (4) a sheet support, wherein, after exposure to actinic radiation, the peel force required to remove the cover sheet (**1**) with the exposed photoadherent layer (**2**) thereon from the contiguous layer (**3**) is at least four times the peel force required to remove the cover sheet (**1**) from an unexposed photoadherent layer (**2**).

4,282,309

PHOTOSENSITIVE COMPOSITION CONTAINING AN ETHYLENICALLY UNSATURATED COMPOUND, INITIATOR AND SENSITIZER

Urbain L. Laridon, Wilrijk; Walter F. DeWinter, s'-Gravenwezel, and Hendrik E. Kokelenberg, Merksem, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Dec. 21, 1979, Ser. No. 106,166

Claims priority, application United Kingdom, Jan. 24, 1979, 02550/79

Int. Cl.[3] G03C *1/68*

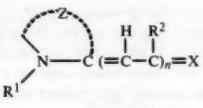
U.S. Cl. 430—281 10 Claims

1. A photosensitive composition which comprises a mixture of:

(1) a photopolymerizable ethylenically unsaturated compound,

(2) an oxime ester photopolymerisation initiator, and

(3) at least one sensitizer increasing the photopolymerisation rate of said composition, characterized in that said sensitizer corresponds to one of the following general formulae:



(A)

wherein:

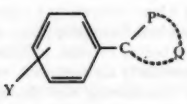
Z represents the necessary atoms to close a nitrogen-containing heterocyclic nucleus and such a nucleus carrying a fused-on aromatic nucleus,

R^1 represents hydrogen or an alkyl group,

R^2 represents hydrogen, an alkyl group or an aryl group,

X represents oxygen, sulphur, a $C(CN)_2$ group or a heterocyclic ketomethylene nucleus, and

n represents 0 or 1; or



(B)

wherein:

Y represents hydrogen, halogen or a dialkylamino group,

P represents oxygen, NH or N-aryl, and

P and Q represent together the necessary atoms to close a 5-membered unsaturated nitrogen containing heterocyclic nucleus carrying at least one further aryl substituent or carrying a fused-on aryl nucleus,

and wherein a mixture of said oxime ester photopolymerisation initiator and the said photopolymerisation rate increasing sensitizer are present in a ratio by weight of between 1:1 and 10:1 and wherein the said mixture of said oxime ester and sensitizer with respect to the photopolymerisable ethylenically unsaturated compound is present at between 10 and 50 percent by weight.

4,282,310

METHOD OF MAKING PRESSURE-SENSITIVE TRANSFER SHEETS

Ronald D. Edhlund, Palatine, Ill., assignor to American Photo-Graphics Corporation, Elk Grove Village, Ill.

Filed Jun. 30, 1980, Ser. No. 164,367

Int. Cl.[3] G03C *1/76*

U.S. Cl. 430—309 7 Claims

1. A method for producing a pressure sensitive dry transfer sheet which comprises the steps of:

applying a release coating to a base sheet;

applying a pigmented ink over the release coating;

applying a photoresist coating over the pigmented ink;

exposing to light only selected portions of the photoresist;

removing the portions of the photoresist and the pigmented ink that are not to be part of the transfer image; and

applying a pressure-sensitive adhesive coating over the transfer image.

4,282,311

METHOD FOR FABRICATING FLYLEADS FOR VIDEO DISC STYLI

Joseph R. Dinardo, Jr., Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,486

Int. Cl.[3] G03C *11/00, 5/00*

U.S. Cl. 430—318 7 Claims

1. A method for preparing a flylead for video disc pickup cartridges consisting essentially of the steps of

laminating a dry film photoresist to both sides of a thin metal sheet between about 0.0002 and 0.0008 inches thick,

exposing the first side to light through a mask so that the pattern on the mask is transferred to the photoresist,

developing the patterned side with a solvent developer to selectively remove photoresist thereby exposing the underlying metal sheet,

etching the exposed metal sheet, and

removing the remaining photoresist from both sides of the etched metal sheet.

4,282,312

COLOR IMAGE FORMING PROCESS

Toshiyuki Watanabe; Takeshi Hirose; Morio Yagihara, and Yukio Yokota, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

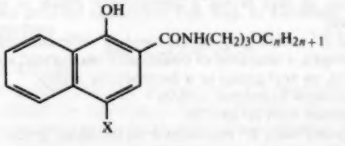
Filed Dec. 18, 1979, Ser. No. 104,999

Claims priority, application Japan, Dec. 20, 1978, 53-158916

Int. Cl.[3] G03C *7/00*

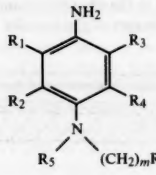
U.S. Cl. 430—384 5 Claims

1. An image forming process which comprises processing a multilayer color photographic material having at least one red sensitive silver halide emulsion layer containing a cyan coupler of the formula (I):



(I)

wherein X represents a hydrogen atom or a chlorine atom and n is a positive integer of 8 to 20, with a color developer containing a developing agent of the formula (II):



(II)

wherein R_1, R_2, R_3 and R_4 each represents a hydrogen atom, a chlorine atom, a methyl group, an ethyl group, a methoxy group, or an ethoxy group; R_5 represents an alkyl group having 1 to 4 carbon atoms, an alkoxyalkyl group wherein the number of carbon atoms in the alkyl moiety is 1 to 4, or a $-(CH_2)_mR_6$ group where R_6 represents a hydroxy group, a methylsulfonamido group, an ethylsulfonamido group; and m is a positive integer of 1 to 4.

4,282,313

PHOTOGRAPHIC MATERIAL WITH STABILIZERS

Ubbo Wernicke, Odenthal; Heinrich Odenwälder, Cologne, and Friedhelm Sommer, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,445

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758720

Int. Cl.[3] **G03C** *7/00, 1/06*

U.S. Cl. 430—407 **4 Claims**

1. In a photographic reversal process for the production of positive photographic images by imagewise exposure of photographic material which contains at least one silver halide emulsion layer,

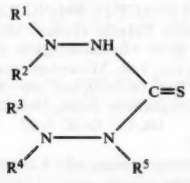
first development of said exposed material in a first developer and,

stabilization of the silver halide in said emulsion against fog, and

subsequent treatment of said first developed material including,

a second development of the photographic material to form a positive reversal photographic image in the material,

the improvement according to which the photographic material contains during said first development in a stabilizing amount at least one compound of the following formula:



in which

R^1 and R^4 which may be the same or different, represent hydrogen, a saturated or olefinically unsaturated aliphatic group, an aryl group, a heterocyclic group or an acyl group;

R^2 and R^3 which may be the same or different, represent hydrogen, a saturated or olefinically unsaturated aliphatic group, an aryl group or a heterocyclic group;

R^5 represents hydrogen, and/or

R^1 together with R^2 and/or

R^3 together with R^4 represent a methylidene group which may be substituted by an alkyl, aryl, heterocyclic group or an acyl group selected from the group consisting of acetyl, benzoyl, phenyl, sulphonyl, carbamoyl, phenyl carbamoyl, ethoxycarbonyl, and ethoxythiocarbonyl, wherein two such substituents together with the carbon atom of the methylidene group can complete a carbocyclic or heterocyclic ring so that said stabilizer inhibits fogging in said first development.

4,282,314

MASK FOR SELECTIVELY TRANSMITTING THERETHROUGH A DESIRED LIGHT RADIANT ENERGY

Donald Dinella, Berkeley Heights, and Ching-Ping Wong, West Windsor Township, Mercer County, both of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 79,000, Sep. 26, 1979, which is a continuation of Ser. No. 900,368, Apr. 26, 1978, abandoned. This application Apr. 30, 1980, Ser. No. 145,176

Int. Cl.[3] **B29C** *17/08;* **G03C** *5/24*

U.S. Cl. 430—413 **8 Claims**

1. A method of fabricating a mask for selectively transmitting therethrough a desired light radiant energy, which comprises:

(a) heat treating a base comprising a copolymer of tetrafluoroethylene and hexafluoropropylene for a period of time sufficient to render it stress-relieved, essentially dimensionally stable, said base being capable of transmitting therethrough the desired light radiant energy and having a thickness of 5 to 10 mils; and

(b) selectively forming a blocking film pattern, incapable of transmitting therethrough the desired light radiant energy, on a surface of said heat treated base.

4. A method for selectively depositing a metal on a surface of a substrate, which comprises:

(a) coating the surface of the substrate with a sensitizing solution comprising at least a reducible salt of a non-noble metal and a radiation sensitive reducing agent for said reducible salt to form a sensitized surface; and

(b) selectively exposing said sensitized surface through a mask, comprising a base comprising a copolymer of tetrafluoroethylene and hexafluoropropylene, which has been heat treated for a period of time sufficient to render it stress-relieved, essentially dimensionally stable, said base being capable of transmitting therethrough the desired light radiant energy and having a thickness of 5 to 10 mils, and a blocking film formed on at least a portion of said base for blocking the transmission of the light radiant energy through said portion of said base, to a source of light radiant energy to reduce said metal salt to a reduced metal salt species to form a catalytic real image capable of catalyzing the deposition of a metal thereon from an electroless metal deposition solution.

4,282,315

PREPARATION OF ENRICHED WHOLE VIRUS RADIOLIGAND

Albert A. Luderer, Corning, and Hugh C. McDonald, Horseheads, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 13, 1979, Ser. No. 74,918

Int. Cl.[3] **C12N** *7/00, 7/02;* **G01N** *33/54, 33/00*

U.S. Cl. 435—5 **42 Claims**

1. A method for preparing a virus subpopulation characterized by significantly increased binding sensitivity toward host cells for the virus, which method comprises contacting a virus population with an inanimate substrate having moieties which mimic host cell receptor sites for cell binding protein of the virus, complexing at least a portion of the virus population with the substrate, removing non-complexed virus, dissociating the complex and recovering the complexed virus from the substrate as said subpopulation.

4,282,316

STABILIZED ENZYMIC SOLUTIONS FOR DETERMINING UREA

Ivan E. Modrovich, 1043 Mesa Dr., Camarillo, Calif. 93010

Filed Sep. 11, 1979, Ser. No. 74,544
Int. Cl.[3] C12Q *1/58*
U.S. Cl. 435—12 11 Claims

1. A stabilized urease solution comprising: essentially heavy-metal-free N-2-hydroxyethyl-piperazine-N'-2-ethanesulfonic acid in an amount from about 0.5 to about 5 percent by weight of the water; a zwitterionic, low-conductivity buffering agent in an amount sufficient to provide a pH within the range of about 5 to 9 and selected from the group consisting of N-2-hydroxyethyl-piperazine-N'-2-ethanesulfonic acid, triethanolamine, tris(hydroxymethyl)aminomethane, diethanolamine, aminomethyl propanol and mixtures thereof; a bacteriostat in an amount sufficient to prohibit bacterial growth, selected from 2,4-dichlorophenol and alcohols that are nondegradative to urease; a chelating agent in an amount sufficient to chelate with any heavy metals present, selected from ethylenediaminetetraacetic acid and amino acids; a polyhydroxy organic compound in an amount of about 50 percent by volume of the solution and selected from the group consisting of glycerol, ethylene glycol, sorbitol and propylene glycol; and urease in an amount greater than about 25,000 IU/l ±25%.

4,282,317

PECTIN CULTURE MEDIA AND METHOD

Jonathan N. Roth, 19676 Riverview Dr., Goshen, Ind. 46526

Continuation-in-part of Ser. No. 3,258, Jan. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 970,347, Dec. 18, 1978, Pat. No. 4,241,187. This application Feb. 21, 1979, Ser. No. 6,253
Int. Cl.[3] C12Q *1/04;* C12N *5/00, 1/20*
U.S. Cl. 435—34 34 Claims

1. A method for preparing a gelled biological growth medium which comprises the steps of:

a. providing a predetermined amount of a liquid growth medium;

b. providing a predetermined amount of a low methoxyl pectin material;

c. providing a culture-growth container having a growth capatible gel therein, the growth-compatible gel containing a multivalent metal cation material suitable to produce gelling of the low methoxyl pectin material, said growth-compatible gel containing a multivalent metal cation material comprising a layer in contact with the bottom of said culture-growth container; and

d. adding the liquid growth medium and low methoxyl pectin material to the culture growth container to produce a gelled growth medium having the low methoxyl pectin material as essentially the sole functional gelling agent.

4,282,318

α-AMYLASE INHIBITOR FROM A STREPTOMYCETE AND PROCESS FOR ITS PREPARATION

Volker Oeding, Kelkheim; Werner Pfaff, Hofheim am Taunus; Laszlo Vertesy, Eppstein, and Hans-Ludwig Weidenmüller, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 870,247, Jan. 17, 1978, Pat. No. 4,226,764. This application Jan. 2, 1980, Ser. No. 109,170
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701890
Int. Cl.[3] C12P *21/00*
U.S. Cl. 435—68 4 Claims

1. A process for preparing a peptidic glycoside hydrolase inhibitor having a molecular weight in the range of from 5,000 to 10,000, an absorption maximum in the ultraviolet light at 276 nm, an isoelectric point of 4.4 and the following amino acid composition:

aspartic acid —5–6
threonine —5–6
serine —3–5
glutamic acid 5–6
proline —2–3
glycine —5–6
alanine —5–6
cysteine —3–4
valine —5–6
isoleucine —1–2
leucine —3–4
tyrosine —4—5
phenylalanine —0–2
histidine —1–2
lysine —0–1
arginine —2–3
tryptophan —1–2

which comprises cultivating *Streptomyces tendae* 4158 (ATCC No. 31210).

4,282,319

PROCESS FOR THE PREPARATION OF A HYDROLYZED PRODUCT FROM WHOLE GRAIN

Ernst Conrad, Lyckeby, Sweden, assignor to Kockums Construction AB, Hoganas, Sweden

Filed Oct. 13, 1978, Ser. No. 951,076
Claims priority, application Sweden, Oct. 18, 1977, 7711742; Nov. 1, 1977, 7712341; Aug. 22, 1978, 7808870
Int. Cl.[3] C12P *21/06;* A23J *1/12*
U.S. Cl. 435—69 13 Claims

1. A process for preparing in situ, enzymatically hydrolyzed protein and starch products from whole grain, comprising crushing said grain and thereafter subjecting the crushed grain to a treatment which consists essentially of both the following steps:

(a) subjecting said grain to an enzymatic treatment in an aqueous medium with an endopeptidase so as to transform substantially all water-insoluble proteins present in the grain to water-soluble protein products, which thereafter are filtered and recovered from the crushed grain as a clear filtrate containing protein products containing about 50 to 60% peptides having at least 25 amino acid residues, 35 to 45% peptides having between about 5 to 20 amino acid residues and 4–8% peptides having up to 4 amino acid residues and subjecting the remaining crushed grain to

(b) an enzymatic treatment in an aqueous medium with at least one starch hydrolyzing enzyme so as to transform substantially all of the water-insoluble starch fraction in the grain to water-soluble, degraded products of starch, and wherein the starch hydrolyzing enzyme is amylase substantially free from other carbohydrate hydrolyzing enzymes.

4,282,320

PRODUCTION OF 1-DESOXYNOJIRIMICIN

Werner Frommer, and Delf Schmidt, both of Wuppertal-1, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 116,174
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907190
Int. Cl.[3] C12P *19/26*
U.S. Cl. 435—84 7 Claims

1. A process for the production of 1-desoxynojirimicin which comprises culturing a 1-desoxynojirimycin producing strain of the Bacillaceae family in a nutrient solution containing sources of carbon and nitrogen and trace elements at temperatures of 15° to 80° C. in a fermentation vessel, whilst aerating, and then isolating the 1-desoxynojirimycin, in which sorbital is employed as the source of carbon in the nutrient solution.

4,282,321

FERMENTATION PROCESS FOR PRODUCTION OF XANTHAN

William C. Wernau, Groton, Conn., assignor to Pfizer, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 964,951, Nov. 30, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 80,195

Int. Cl.³ C12P *19/06;* **C12R** *1/64*

U.S. Cl. 435—104 **4 Claims**

1. A batch process for producing Xanthomonas biopolymer comprising the steps of aerobically propagating a microorganism of the genus Xanthomonas in an aqueous nutrient medium containing a source of assimilable carbon to form an inocolum, introducing said inocolum into an aqueous medium substantially free of a suitable carbon source, initially feeding at an exponentially increasing rate a source of assimilable carbon into said inocolulated medium under aerobic conditions for 0 to 24 hours, then continuing feeding at a substantially constant rate until a total carbohydrate consumption equivalent to up to about 7% w/v glucose is achieved and recovering the product.

4,282,322

PROCESS FOR ENZYMATIC DEACYLATION OF ANTIBIOTICS

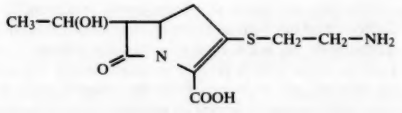
Jean S. Kahan, and Frederick M. Kahan, both of Rahway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 893,848, Apr. 6, 1978, abandoned, which is a continuation of Ser. No. 734,584, Oct. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,560, Nov. 24, 1975, abandoned. This application Aug. 27, 1979, Ser. No. 70,082

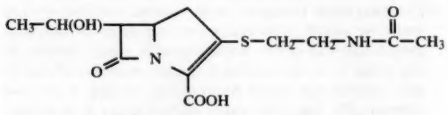
Int. Cl.³ C12P *17/18*

U.S. Cl. 435—119 **11 Claims**

1. A process for producing the compound desacetyl $890A_1$ having the structure:



produced by enzymatic cleavage of the compound $890A_1$ wherein $890A_3$ has the following structure:



and wherein said $890A_3$ has 100 MHz nuclear magnetic reasonance signals having chemical shifts in ppm and multiplicities indicated as 1.35 (d, J=6.5); 1.98 (s); 3.63 (d of d, J=5.2 and J=9.8); ~4.02–4.26 (m); 3.18 (d of d, J=2 and J=10); 3.41 (t, J=6); 2.97 (d of t, J=3.5 and J=6), wherein the enzymatic cleavage utilizes an amidohydrolase capable of hydrolyzing the N-acetyl group.

4,282,323

REMOVAL AND CONCENTRATION OF LOWER MOLECULAR WEIGHT ORGANIC ACIDS FROM DILUTE SOLUTIONS

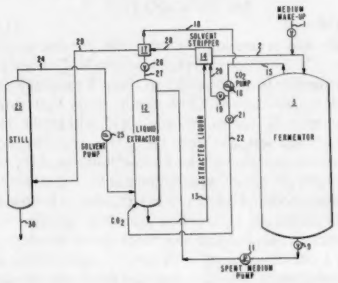
Richard A. Yates, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 9, 1979, Ser. No. 82,986

Int. Cl.³ C12P *7/40, 7/54;* **C12R** *1/145*

U.S. Cl. 435—140 **21 Claims**

1. A process of recovering a carboxylic acid containing from 1 to 20 carbon atoms from an aqueous source solution of an alkali metal, alkaline earth metal or ammonium salt of said carboxylic acid comprising contacting said aqueous solution, in the presence of a liquid polar organic solvent having a



boiling point of from −30° to 90° C., with carbon dioxide under pressure, to convert at least part of said salt to the corresponding acid, whereby said acid is dissolved in said solvent, and recovering said acid therefrom.

4,282,324

METHOD FOR PRODUCING IODINE

Saul L. Neidleman, Oakland, and John Geigert, Concord, both of CA, assignors to Cetus Corporation, Berkeley, Calif.

Filed Jun. 25, 1979, Ser. No. 51,847

Int. Cl.³ C12P *3/00*

U.S. Cl. 435—168 **8 Claims**

1. A method for producing iodine, comprising, providing, in the absence of iodine acceptor substrates, a reaction mixture of water, a halogenating enzyme, an oxidizing agent, a water-immiscible organic solvent, and a source of ionic iodide, buffering said reaction mixture to maintain it at a pH of between about 2 to 8, and recovering the molecular iodine continuously in said organic solvent as it is formed by said reaction mixture.

4,282,325

ENZYME BOUND CORTICOSTEROIDS

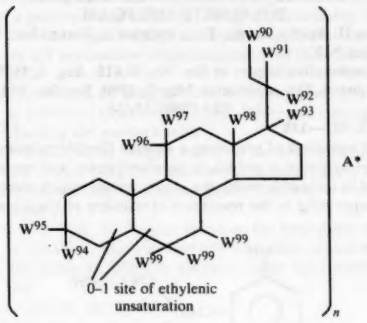
Kenneth E. Rubenstein, Menlo Park, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 857,145, Dec. 5, 1977, Pat. No. 4,203,802, which is a division of Ser. No. 722,964, Sep. 13, 1976, Pat. No. 4,067,774, which is a continuation of Ser. No. 481,022, Jun. 20, 1974, abandoned, which is a division of Ser. No. 304,157, Nov. 6, 1972, Pat. No. 3,852,157, which is a continuation-in-part of Ser. No. 143,609, May 14, 1971, abandoned, and a continuation-in-part of Ser. No. 802,683, Jun. 2, 1977, Pat. No. 4,190,496, which is a continuation of Ser. No. 760,499, Jan. 19, 1977, Pat. No. 4,191,613, which is a continuation-in-part of Ser. No. 722,964,. This application May 7, 1979, Ser. No. 36,929

Int. Cl.³ C12N *9/96*

U.S. Cl. 435—188 **5 Claims**

1. An enzyme-bound-ligand according to the formula:



wherein:

any one of the W groups can be —X*, or an H of any of the W groups may be replaced by —X*, wherein —X* is a bond or a linking group;

A* is an enzyme bonded at other than its reactive site, having n ligands, wherein n is in the range of 1 to the molecular weight of A* divided by 2,000;

W^{90} is hydrogen or hydroxyl;

W^{91} and W^{92} are hydrogen or hydroxyl, at least one being hydroxyl, when both are hydroxyl, oxo is intended;

W^{93} is hydrogen or hydroxyl;

W^{94-97} are hydrogen or hydroxyl, at least one of W^{94} and W^{95} is hydroxyl;

W^{98} is methyl or formyl; and

W^{99} is hydrogen or two W^{99}'s may be taken together to form a double bond.

4,282,326

CELL CULTURE MEDIUM SUPPLEMENT

Jeanne Moldenhauer, Rte. 2, Box 361A, Long Grove, Ill. 60047

Continuation-in-part of Ser. No. 950,748, Oct. 12, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,248

Int. Cl.³ C12N *5/00*

U.S. Cl. 435—240 **5 Claims**

1. A cell culture medium supplement comprising a solution of:

approximately 0.336% by dry weight of potassium chloride;

approximately 0.336% by dry weight of monobasic potassium phosphate;

approximately 13.4% by dry weight of sodium chloride;

approximately 1.93% by dry weight of dibasic sodium phosphate; and

approximately 84.0% by dry weight of amino acids of such composition sufficient to support growth in the cells to be cultured, said amino acids comprising the following in approximate amounts:

L-cystine-trace
L-tyrosine 1.26%
Lysine 6.25%
Histidine 2.62%
Arginine 3.45%
Aspartic Acid 8.96%
Threonine 4.30%
Serine 4.75%
Glutamic Acid 11.08%
Proline 4.65%
Glycine 5.98%
Alanine 6.78%
Valine 6.30%
Methionine 1.93%
Isoleucine 3.19%
Leucine 7.26%
Phenylalanine 4.35%
Tryptophan 0.99%

whereby the cell culture medium properties of blood serum are simulated.

4,282,327

BIOLOGICALLY PURE CULTURE OF *PAECILOMYCES ABRUPTUS*

Ladislav J. Hanka, and Paul F. Wiley, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 789,644, Apr. 22, 1977, Pat. No. 4,123,521. This application Jun. 21, 1978, Ser. No. 917,599

Int. Cl.³ C12N *1/14*

U.S. Cl. 435—254 **1 Claim**

1. A biologically pure culture of the microorganism *Paecilomyces abruptus* sp. nov., having the identifying characteristics of NRRL 11,110, said culture being capable of producing antibiotic U-53,946, said antibiotic in its essentially pure form:

(a) has the molecular formula $C_{61}H_{107}N_{11}O_{14}$;

(b) has the following elemental analysis: C, 60.13, 59.73; H, 9.21, 8.92; N, 12.16, 11.97; O, 18.44;

(c) has a specific rotation of $[\alpha]_D^{25} = -26°$ (c, 0.9175 EtOH);

(d) is soluble in lower alcohols, for example, methanol, ethanol and butanol; ketones, for example, methyl ethyl ketone, halogenated solvents, ethyl acetate, or other ester-type solvents; and is relatively insoluble in aliphatic hydrocarbons;

(e) has a characteristic infrared adsorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawings; and,

(f) has a characteristic UV spectrum as shown in FIG. 2 of the drawings,

in a recoverable quantity upon fermentation in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances.

4,282,328

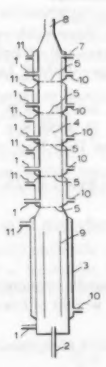
APPARATUS FOR CULTIVATING AEROBIC MICROORGANISMS AND PROCESS FOR CULTIVATION USING THE SAME

Hideki Fukuda, Hyogo; Takeshi Shiotani, Takasago, and Wataru Okada, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 19, 1979, Ser. No. 105,417

Int. Cl.³ C12N *1/16*

U.S. Cl. 435—255 **11 Claims**



1. An apparatus for cultivating microorganisms, comprising a cell multiplying means comprising

a cylindrical extended draft tube fermenter having a bottom and a top and a draft tube therein extending through part of said fermenter,

means for controlling the temperature of said fermenter,

inlet means disposed toward the bottom of said fermenter for supplying nutrients to said fermenter, and

means for supplying air to the bottom of said fermenter thereby to cause air to travel upward through said draft tube mixed with said nutrient; and

cell ripening means comprising

a plurality of cylindrical units connected to each other in vertical disposition with the bottommost unit connected to the top of said tube fermenter, and the topmost unit having an opening at the top thereof and having an outlet disposed toward the top thereof, each of said units comprising an inlet means disposed toward the bottom of each unit for supplying nutrients to each unit, each unit also having an opening at the bottom thereof and an opening at the top thereof, each unit having said top and bottom connected to another respective unit, each unit having perforated plates disposed across the bottom opening, and means for controlling the temperature of each unit, whereby the bottommost unit is connected to the top of said draft tube fermenter, and the topmost unit opening being to exhaust air, and the outlet being for removal of nutrient liquor, whereby nutrients supplied to the bottom of said draft tube fermenter through said inlet means of said fermenter is mixed in said draft tube with air supplied through said means for supplying air, and caused to rise until coming into approximate contact with the perforated plate of the bottommost unit of said cell ripening means and then caused to turn downward near the exterior periphery of said fermenter, and said air is caused to continue to rise toward the opening at the topmost unit, and wherein in each unit new nutrient is supplied through said inlet means and aerated by said air, thereby to cause increased cell concentration and improved cell ripening by enhanced oxygen transfer throughout said draft tube and throughout said units.

4,282,329

STABILIZED FILLER SUSPENSIONS IN POLYOLS

Wulf von Bonin, Leverkusen; Peter Vehlewald, Leichlingen, and Hans-Walter Illger, Roesrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 61,715, Jul. 30, 1979, Pat. No. 4,240,950. This application Jul. 21, 1980, Ser. No. 170,328

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834623

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—99 **5 Claims**

1. In a process for the production of cellular polyurethane plastics comprising:

(A) polyisocyanates with

(B) polyhydroxyl compounds containing inorganic fillers and having a molecular weight of from 500 to 10,000 and, optionally,

(C) other isocyanate-reactive compounds, optionally in the presence of

(D) catalyts, blowing agents and other additives known per se,

the improvement wherein component (B) is a stabilized suspension obtained by reacting a suspension of an inorganic filler in a polyhydroxyl compound with from 0.1 to 2%, by weight, of a polyisocyanate, based on the weight of the suspension, at a temperature of from 30° to 200° C.

4,282,330

ENERGY MANAGEMENT POLYETHER POLYURETHANE FOAM

Thomas H. Austin, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

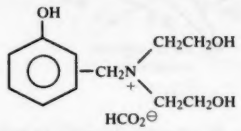
Continuation-in-part of Ser. No. 63,615, Aug. 3, 1979, abandoned. This application May 5, 1980, Ser. No. 146,961

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—118 **2 Claims**

1. In a method of preparing a molded flexible polyurethane product wherein a polyol, a polyisocyanate and water are reacted in a closable mold, the improvement which comprises:

incorporating in the reaction a crosslinker of the formula:



where the crosslinker is present in amounts ranging from about 6% to 30% based on the polyol.

4,282,331

POLYURETHANE FOAM PREPARED FROM A COPOLYMER/POLYOL COMPOSITION

David C. Priest, Charlotte, N.C., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 417,487, Nov. 20, 1973, Pat. No. 4,208,314, which is a continuation-in-part of Ser. No. 176,317, Aug. 30, 1971, abandoned. This application Feb. 19, 1980, Ser. No. 122,483

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—137 **10 Claims**

1. A method for producing a polyurethane foam by reacting and foaming (a) a fluid polymer-polyol composition which is convertible to a polyurethane foam having reduced scorch by reaction with water and an organic polyisocyanate and which is the free radical catalyst-catalyzed reaction product formed by polymerizing (1) from 10 to 30 weight percent of a mixture of (a) from 33 to 75 weight percent of acrylonitrile or methacrylonitrile and (b) from 25 to 67 weight percent styrene or alpha-methyl styrene, said weight percents of the nitrile and the styrene or alpha-methyl styrene being based on the total weight of those materials dissolved or dispersed in (2) from 70 to 90 weight percent of a normally liquid polyoxyalkylene polyol having a hydroxyl number from 20 to 150, said weight percent of the mixture and polyol being based on the total weight of the monomers and the polyol and said polymer consisting essentially of polymer particles having diameters less than one micron suspended in the polyol, (b) an organic polyisocyanate, (c) a catalyst for the reaction of (a) and (b) to produce the polyurethane, (d) a blowing agent, and (e) a foam stabilizer.

4,282,332

POLYOLS DERIVED FROM 4,4,4-TRICHLORO-1,2-EPOXYBUTANE AND/OR EPIHALOHYDRIN FOR USE IN THE PRODUCTION OF HEAT SEALABLE FOAMS

Barry A. Phillips, Slovan; Keith G. Spitler, Bethel Park, both of Pa., and Richard E. Keegan, New Martinsville, W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 8,147, Jan. 31, 1979. This application May 5, 1980, Ser. No. 146,983

Int. Cl.[3] C08G *18/14*

U.S. Cl. 521—171 **8 Claims**

1. A polyurethane foam produced by the steps comprising reacting:

(I) an organic polyisocyanate;

(II) a polyol having a molecular weight of 2,000 to 8,000, comprising the adduct obtained by sequentially reacting:

(a) a polyhydroxyl initiator having a functionality of 2 to 5 and a weight average molecular weight as determined by gel permeation chromatography of from 62 to 200; with

(b) 10 to 90%, by weight, based on the total oxide present in (b)+(c)+(d), a first alkylene oxide; and subsequently reacting the product with

(c) 10 to 80%, by weight, based on the total oxide present in (b)+(c)+(d), 4,4,4-trichloro-1,2-epoxybutane and/or epihalohydrin; and subsequently reacting the product with

(d) 10 to 60%, by weight, based on the total oxide present in (b)+(c)+(d), a second alkylene oxide which may be the same or different alkylene oxide than component (b);

(III) catalysts; and optionally

(IV) foaming agent.

4,282,333

POLYOLEFIN SERIES RESIN COMPOSITION FOR WATER-TREE RETARDANT ELECTRIC INSULATION

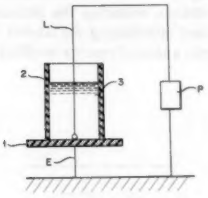
Shin-ichi Irie, Ichihara; Kenji Uesugi, Chiba-Ken, and Hitoshi Kimura, Ichihara, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1980, Ser. No. 114,570

Claims priority, application Japan, Jan. 29, 1979, 54/8896

Int. Cl.³ C08K *5/29*; B32B *27/18*

U.S. Cl. 525—6 **13 Claims**



1. A polyolefin series resin composition for water-tree retardant electric insulation which comprises a polyolefin series resin and an organic isocyanate compound having at least one isocyanate radical in the molecule.

4,282,334

MANUFACTURE OF HIGH IMPACT AND TRANSLUCENT STYRENE POLYMERS

Manfred Walter, Speyer; Dieter Stein, Limburgerhof; Gerhard Fahrbach, Plankstadt; Rudolf Jung, Worms, and Adolf Echte, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 933,996, Aug. 16, 1978, abandoned, which is a continuation of Ser. No. 776,223, Mar. 10, 1977, abandoned. This application Nov. 27, 1979, Ser. No. 97,815

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1976, 2613352

Int. Cl.³ C08F *279/02*

U.S. Cl. 525—53 **7 Claims**

1. In a process for the manufacture of a high-impact polymer with a turbidity in the range of from 5 to 40/cm consisting essentially of styrene and 1 to 20% by weight of a natural or synthetic rubber by polymerizing styrene in the presence of 1 to 20% by weight, based on styrene, of the rubber in at least two stages,

in which in a first stage, the styrene, which contains the rubber in solution, is prepolymerized at from 50° to 150° C. in the presence or absence of inert diluents and/or of initiators which form free radicals, while breaking up the disperse soft-component phase which forms during the polymerization by shearing the polymerization mixture, and thereafter

in one or more further stages, the polymerization is completed by taking it to the desired conversion with reduced shearing or entirely without shearing, in mass, in solution or in aqueous suspension, the shearing during the prepolymerization being maintained until the amount of styrene converted, based on the starting solution to be polymerized, corresponds to from 3 to 10 times the amount of elastomer constituent of the total amount of rubber employed,

wherein the improvement comprises:

carrying out the shearing during the prepolymerization in such a way that the particles of the disperse soft-component phase thus formed have a weight-average mean diameter of from about 0.2 to 0.6 μm, and

the disperse soft-component phase contains, during the prepolymerization, from 35 to 65 percent by weight of free or chemically bonded polystyrene segments with at least 50% by weight of these polystyrene segments being incorporated into the rubber component in a chemically bonded form, as a polymer block or a grafted branch, said segments having a number-average molecular weight of at least 30,000 and below 250,000.

4,282,335

HIGH MOLECULAR RESIN COMPOSITION

Akitoshi Sugio, Ohmiya; Masanobu Masu, Tokyo; Yukio Sasaki, Tokyo, and Zenpei Mizutani, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,136

Claims priority, application Japan, Mar. 30, 1979, 54/37016

Int. Cl.³ C08L *61/04*

U.S. Cl. 525—68 **36 Claims**

1. A high molecular resin composition comprising

(1) 97 to 99.9% by weight of a polymeric matrix containing polyphenylene ether, and

(2) dispersed therein, 0.1 to 3% by weight of an olefin oligomer having a number average molecular weight of not more than about 10,000.

4,282,336

CURABLE DIALLYL PHTHALATE COMPOUNDS AND PROCESS FOR PRODUCING SAME

Kazuya Yonezawa; Hisao Furukawa, and Masaaki Azuma, all of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 936,378, Aug. 24, 1978, Pat. No. 4,161,572. This application Jan. 8, 1979, Ser. No. 1,853

Claims priority, application Japan, Aug. 29, 1977, 52/103902

Int. Cl.³ C07F *7/02*; C08F *8/42, 8/18, 8/32*

U.S. Cl. 525—102 **1 Claim**

1. A curable diallyl phthalate compound produced by a process wherein diallyl phthalate monomer or diallyl phthalate prepolymer having a molecular weight of 20,000 or less, is reacted with a hydrosilane compound represented by the formula:

$$H \cdot SiX_{3-a}^{(R_1)_a}$$

wherein R_1 is a monovalent hydrocarbon group having 1 to 10 carbon atoms; X is a group selected from the group consisting of halogen, alkoxy, acryloxy, aminoxy, phenoxy, thioalkoxy and amino groups; and a is an integer 0, 1 or 2; at a temperature of between 50° and 150° C.

4,282,337

PROCESS FOR PREPARING GRAFT POLYMERS OF α,α'-DISUBSTITUTED-β-PROPIOLACTONES ON ISOBUTYLENE-TRIENE-COPOLYMERS

Arnaldo Roggero, S.Donato Mi, and Alberto Gandini, Milan, both of Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Apr. 25, 1980, Ser. No. 144,170
Claims priority, application Italy, May 14, 1979, 22641 A/79
Int. Cl.[3] C08F *35/06, 27/12*
U.S. Cl. 525—153 12 Claims

1. A process for preparing graft polymers of α,α'-dialkylsubstituted β-propiolactones which comprises reacting a copolymer of isobutylene and a polyconjugated polyene linear hydrocarbon containing at least three conjugated double bonds with a dienophile under Diels-Alder reaction conditions to provide a functionalized copolymer substituted with a group selected from an acid, anhydride or ester group, and then reacting said functionalized copolymer with a α,α'dialkylsubstituted β-propiolactone in a solvent at a temperature of from −80° C. to 20° C., and recovering product.

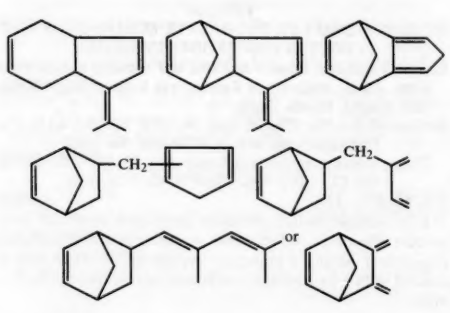
4,282,338

PROCESS FOR THE PREPARATION OF GRAFTED POLYMERS OF α-SUBSTITUTED-β-PROPIOLACTONE ON AMORPHOUS BASE POLYMERS

Arnaldo Roggero, and Luciano Zotteri, both of S. Donato Mi, Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Mar. 26, 1980, Ser. No. 134,092
Claims priority, application Italy, Apr. 4, 1979, 21565 A/79
Int. Cl.[3] C08F *35/06, 27/12*
U.S. Cl. 525—153 16 Claims

1. A process for preparing graft polymers of α-substituted-β-propiolactones which comprises reacting an ethylene-propylene-triene terpolymer wherein said triene component is selected from



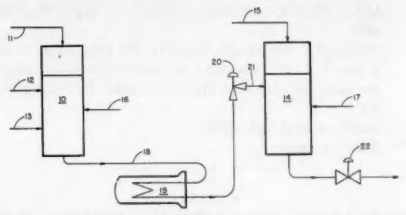
and wherein said terpolymer has an unsaturation concentration of between 0.01 and 1 mole/kg and a functionalizing agent to form an anionic site on said terpolymer, said reaction carried out in a solvent at a temperature of from ambient to 100° C., then reacting the resulting functionalized terpolymer having anionic sites with an α-substituted-β-propiolactone wherein the molar ratio of said β-propiolactone to said anionic sites is from 3 to 1000, in a solvent at a temperature from −80° to 200° C.

4,282,339

DUAL REACTOR PROCESS AND APPARATUS FOR POLYMERIZING ETHYLENE

Charles R. Donaldson, and Claude J. Stiles, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Division of Ser. No. 947,801, Oct. 2, 1978, Pat. No. 4,229,416.
This application Dec. 17, 1979, Ser. No. 104,609
Int. Cl.[3] C08F *2/34, 4/28, 10/02*
U.S. Cl. 526—64 8 Claims



1. A process for polymerizing ethylene in a dual reactor system which comprises reacting ethylene in the presence of a catalyst at elevated pressure and temperature in a first reactor to provide a high pressure reaction stream containing dissolved polyethylene and unreacted ethylene, passing the high pressure reaction stream through an intercooler, prior to a reduction in pressure of said high pressure reaction stream, to effect cooling of the reaction stream, reducing the pressure of the cooled reaction stream, and introducing the cooled, reduced pressure reaction stream into a second reactor to effect further polymerization.

4,282,340

POLYMERIZATION PROCESS FOR PREPARATION OF ACRYLAMIDE HOMOPOLYMERS WITH REDOX CATALYST

Michael J. Anchor, Canton Township, Wayne County, and Robert Login, Woodhaven, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 11, 1980, Ser. No. 111,402
Int. Cl.[3] C08F *4/40*
U.S. Cl. 526—93 12 Claims

1. A process for the preparation of high molecular weight acrylamide homopolymers utilizing a free-radical-generating redox pair catalyst comprising

(A) maintaining at ambient temperature and pressure under aqueous polymerization conditions a mixture of water, 10 to 50 percent by weight of said mixture of acrylamide monomer, a catalytic amount of a metal ion co-catalyst, and a catalytic amount of a first member of the Redox pair catalyst,

(B) intimately combining an organic polymer capable of forming a colloidal dispersion in aqueous nedia with a catalytic amount of a second member of a redox pair catalyst,

(C) admixing (A), (B), and allowing polymerization to initiate, no heat or pressure being added during the polymerization process, and

(D) recovering an aqueous mixture of a high molecular weight acrylamide homopolymer.

4,282,341

MANUFACTURE OF HOMOPOLYMERS AND COPOLYMERS OF α-MONOOLEFINS

Peter Klaerner, Battenberg; Gerhard Staiger, Bobenheim-Roxheim, and Klaus Bronstert, Carlsberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 74,758

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 2841715

The portion of the term of this patent subsequent to Jun. 17, 1997, has been disclaimed.

Int. Cl.³ C08F *4/66, 10/06*

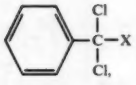
U.S. Cl. 526—124 **1 Claim**

1. In a process for the preparation of homopolymers and copolymers of C_2–C_6-α-monoolefins by polymerizing the monomer or monomers at from 30° to 200° C. under pressures of from 0.1 to 200 bar by means of a Ziegler-Natta catalyst comprising (I) a titanium chloride component and (II) an aluminum-alkyl component of the general formula AlR_3 or $ClAlR_2$, where R is C_1–C_8-alkyl, in the atomic ratio of titanium from catalyst component (I): aluminum from catalyst component (II) of from 1:1 to 1:100, the improvement which comprises using as the titanium chloride component (I) of the catalyst a compound obtained by milling

(1) in a first stage

(1.1) 100 parts by weight of an alcoholate of the general formula $Mg(OD)_2$, where D is alkyl of 2 to 4 carbon atoms, with

(1.2) the appropriate number of parts by weight of a cholorotoluene of the formula



where X is chlorine or hydrogen, to give a molar ratio of alcoholate (1.1): chlorine in the chlorotoluene (1.2) of from 100:3 to 100:30,

in a vibratory ball mill, with a milling acceleration of from 45 to 55 $m \times sec^{-2}$ for a period of from 10 to 60 hours at from −30° to −5° C. in the absence of a diluent, thereafter bringing together

(2) in a second stage

(2.1) 100 parts by weight of the material resulting from stage (1) with

(2.2) from 500 to 1,000 parts by weight of titanium tetrachloride, the batch being kept for from 0.5 to 2 hours at from 70° to 90° C., with constant mixing, and the resulting solid being isolated, excess titanium tetrachloride being separated off, and then bringing together

(3) in a third stage

(3.1) 100 parts by weight of the solid resulting from stage (2) with

(3.2) from 500 to 1,000 parts by weight of titanium tetrachloride, the batch being kept for from 0.5 to 2 hours at from 120° to 140° C. with constant mixing, and the resulting solid being isolated, excess titanium tetrachloride being separated off, and finally

exposing the solid resulting from stage (3) to a carbon dioxide atmosphere as a pressure of from 0.2 to 5 bar, at from 0° to 50° C., for a period of from 1 to 30 minutes.

4,282,342

PREPARATION OF TERPOLYMERS

Walter Denzinger, Speyer, and Claus Cordes, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,985

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 2840502

Int. Cl.³ C08F *222/06*

U.S. Cl. 526—272 **3 Claims**

1. A terpolymer which has a Fikentscher K-value of from 8 to 100 and which comprises 50 mole percent of maleic anhydride units, from 35 to 45 mole percent of 2,4,4'-trimethylpent-1-ene units and from 5 to 15 mole percent of 2,4,4'-trimethylpent-2-ene units.

4,282,343

POLY-(ALPHA-ALKOXY)ACRYLAMIDE AND POLY-(ALPHA-ALKOXY)ACRYLAMIDE COMPLEXES

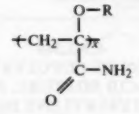
James L. Platt, Jr., Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 7, 1980, Ser. No. 119,254

Int. Cl.³ C08F *8/00, 122/40*

U.S. Cl. 525—336 **8 Claims**

1. Poly-(alpha-alkoxy)acrylamide having the formula:



wherein R is an alkyl group of 1 to 12 carbon atoms and x is an integer ranging from about 100 to 100,000.

4,282,344

POLYURETHANE CURING AGENT DISPERSION, PROCESS AND PRODUCT

Paul P. Caruso, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 957,226, Nov. 2, 1978, abandoned. This application Nov. 21, 1979, Ser. No. 96,563

Int. Cl.³ C08G *18/32, 18/65*

U.S. Cl. 528—51 **13 Claims**

1. A process for preparing a composition useful for curing an isocyanato-terminated polyurethane prepolymer, said process comprising

(1) forming a mixture of a substantially inert organic liquid (A), with particles, (B), of a complex of 3 moles of 4,4'-methylenedianiline and 1 mole of a salt selected from the group: sodium chloride, sodium bromide, sodium iodide, lithium chloride, lithium bromide and lithium iodide, said particles having an average diameter of less than 60 microns;

the weight proportion of liquid (A) in the mixture being about 20–90%, and that of particles (B) being about 10–80%, said mixture having a free methylenedianiline content of about 0.1–5% by weight;

(2) adding to said mixture with good agitation at least 0.5 equivalent of an organic isocyanate per equivalent of the free methylenedianiline,

(3) while continuing agitation, allowing said organic isocyanate to react with said methylenedianiline; and

(4) adding at least 0.5 weight % of lecithin.

9. A composition suitable for curing isocyanato-terminated polyurethane prepolymers, said composition comprising a substantially inert organic liquid, (A) and, dispersed in component (A), particles. (B), of a complex of 3 moles of 4,4'-methylenedianiline and 1 mole of a salt selected from the

group: sodium chloride, sodium bromide, sodium iodide, lithium chloride, lithium bromide and lithium iodide; substantially no free methylenedianiline being present in said composition, free methylenedianiline having been removed by

(1) adding to the initial dispersion of particles (B) in the liquid (A) with good agitation about 0.5 to 2.0 equivalents of an organic isocyanate per equivalent of the initially present free methylenedianiline;

(2) while continuing agitation, allowing said organic isocyanate to react with said methylenedianiline; and

(3) adding at least 0.5 weight percent of lecithin.

4,282,345

METHOD OF PREPARING RESINOUS CONDENSATION PRODUCT OF AN ALLYLATED ALKYLOL PHENOL AND AN ETHOXYLINE RESIN

John D. Nelson, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 16, 1980, Ser. No. 140,687
Int. Cl.³ C08G *59/62*
U.S. Cl. 528—88 **12 Claims**

1. A method of preparing organic solvent soluble thermosetting resins which comprises condensing an ethoxyline resin with an allylated polyalkylol phenol by heating said reactants in the presence of an acid catalyst and a compound selected from the group consisting of isobutyl alkyl ketones, isobutyl alkyl esters, and mixtures thereof.

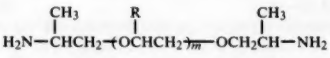
4,282,346

PREPARATION OF COPOLYAMIDE FROM DICARBOXYLIC ACID MIXTURE, PIPERAZINE AND POLYOXYALKYLENE DIAMINE

Hubert J. Sharkey, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 11,456, Feb. 2, 1979. This application Oct. 26, 1979, Ser. No. 88,683
Int. Cl.³ C08G *69/28*
U.S. Cl. 528—338 **2 Claims**

1. In a process for the preparation of thermoplastic copolyamide adhesive resins by the reaction of essentially stoichiometric amounts of reactants consisting essentially of (a) a mixture of adipic acid and a long-chain aliphatic saturated dicarboxylic acid having 8 to 14 carbon atoms, (b) piperazine and (c) a polyoxyalkylene diamine of the general formula



where R is hydrogen or a methyl group and m is a positive integer such that the average molecular weight of the polyoxyalkylene diamine is between about 200 and 800, the improvement which comprises heating the adipic acid, long-chain aliphatic saturated dicarboxylic acid and polyoxyalkylene diamine at 160° C. to 220° C. with agitation under an inert atmosphere and adding piperazine as an anhydrous melt or aqueous solution at a rate to avoid polymeric salt formation.

4,282,347

PREPARATION OF BRANCHED POLYMERS OF ARYLENE SULFIDE

Dale O. Tieszen, and Lacey E. Scoggins, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1979, Ser. No. 66,584
Int. Cl.³ C08G *75/16*
U.S. Cl. 528—388 **10 Claims**

1. A process for the production of branched polymers of arylene sulfide said process comprising:

(a) contacting under polymerization conditions for a time sufficient to form arylene sulfide polymer a reaction mixture comprising:

(1) at least one p-dihalobenzene;

(2) at least one alkali metal sulfide;

(3) at least one organic amide;

(4) water in an amount of about 1.0 mole to about 2.4 moles per mole of alkali metal sulfide, said amount including water of hydration; and

(5) at least one alkali metal carboxylate;

(b) contacting with said arylene sulfide polymer formed in said reaction mixture, under polymerization conditions, an amount of polyhaloaromatic compound having more than 2 halogen constituents per molecule sufficient to produce branched polymer and for a time up to about 75 minutes before entering upon termination of the polymerization process said time sufficient to produce branched polymer; and

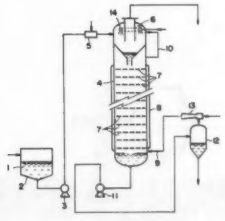
(c) contacting carbon dioxide with said arylene sulfide polymer formed in said reaction mixture in an amount sufficient to stabilize said polymer relative to thermal degradation and for a time having a range of up to about 1 hour before termination of the polymerization process.

4,282,348

METHOD FOR REMOVING UNREACTED MONOMER FROM THE AQUEOUS DISPERSION OF POLYMERIZATE OF VINYL CHLORIDE AND APPARATUS THEREFOR

Norinobu Wada, and Yoshitaka Okuno, both of Ibaragi, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Mar. 30, 1977, Ser. No. 782,732
Claims priority, application Japan, Apr. 3, 1976, 51/37451
Int. Cl.³ C08F *6/24, 14/06*
U.S. Cl. 528—500 **10 Claims**



1. A method for removing unreacted residual vinyl chloride monomer from an aqueous slurry of a vinyl chloride polymerizate containing unreacted vinyl chloride monomer which slurry is of the usual range of 20 to 50% solid by weight and is produced by the polymerization of vinyl chloride or a monomer mixture mainly composed of vinyl chloride in an aqueous medium comprising:

(a) feeding the aqueous slurry to a cyclone type mist separator positioned at the top of a column having a sequence of perforated plates with openings of from about 3 to 50 mm in diameter, the total area of the openings in one perforated plate being in the range from about 3 to 20% of the cross-sectional area of the plate,

(b) feeding the aqueous slurry coming from the cyclone-type mist separator to the top of the column whereby the aqueous slurry flows downwardly through the perforations in the perforated plates,

(c) blowing steam into the bottom of the column, to cause it to ascend in the column through the perforations of the perforated plates to bring the steam into counter-current contact with the descending aqueous slurry, and

(d) maintaining a temperature of between about 60° to 120° C. and a pressure of about the saturated vapor pressure of water at that temperature inside the column.

4,282,349

CRYSTALLINE RIBOFURANOSYL HALIDES AND OTHER DERIVATIVES AND METHODS FOR PRODUCING SAME

Hassan S. El Khadem, Houghton, Mich.; Thakur D. Audichya, Poona, India, and John Kloss, Gurnee, Ill., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Continuation of Ser. No. 750,265, Dec. 13, 1976, abandoned. This application Oct. 16, 1978, Ser. No. 951,969

Int. Cl.[3] C07H *15/02, 15/18, 13/02*

U.S. Cl. 536—4 14 Claims

1. A crystalline ribofuranosyl derivative selected from the group consisting of methyl-2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranoside, a 2,3,5-tri-O-(p-nitrobenzoyl)-D-ribofuranosyl halide, 2,5-anhydro-3,4,6-tri-O-(p-nitrobenzoyl)-D-allononitrile, 2,3,5-tri-O-(p-nitrobenzoyl)-D-ribofuranose, and 1,2,3,5-tetra-O-(p-nitrobenzoyl)-β-D-ribofuranose.

13. A method for preparing a crystalline 2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranosyl halide comprising the steps of

admixing a compound containing a p-nitrobenzoyl halide with a solution of methyl-D-ribofuranoside under reaction conditions whereby each of the three hydroxyl groups of the latter compound are replaced with a p-nitrobenzoyl group of the former compound to obtain methyl-2,3,5-tri-O-(p-nitrobenzoyl-β-D-ribofuranoside;

admixing a halogenating agent with a solution of said methyl-2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranoside under anhydrous reaction conditions whereby the methyl group of the latter compound is replaced by the halide of the halogenating agent; and crystallizing out said 2,3,5-tri-O-(p-nitrobenzoyl)-β-D-ribofuranosyl halide from the resultant reaction mixture.

4,282,350

SELECTIVE 3″-N-ACYLATION OF 1,3″-DI-N-UNPROTECTED-POLY-N-PROTECTED-4,6-DI-O-(AMINOGLYCOSYL)-1,3-DIAMINOCYCLITOLS

John J. Wright, Cedar Grove, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Aug. 5, 1977, Ser. No. 822,118

Int. Cl.[3] C07H *15/22*

U.S. Cl. 536—10 10 Claims

7. A 1-N-unprotected-poly-N-R-3″-N-Z-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitol, selected from the group consisting of:

3,2′-di-N-R-3″-N-Z-gentamicin A,
3,6′-di-N-R-3″-N-Z-gentamicin B,
3,6′,-di-N-R-3″-N-Z-gentamicin B_1,
3,2′,6′-tri-N-R-3″-N-Z-gentamicin C_1,
3,2′,6′-tri-N-R-3″-N-Z-gentamicin C_{1a},
3,2′,6′-tri-N-R-3″-N-Z-gentamicin C_2,
3,2′,6′-tri-N-R-3″-N-Z-gentamicin C_{2a},
3,2′,6′-tri-N-R-3″-N-Z-gentamicin C_{2b},
3,2′-di-N-R-3″-N-Z-gentamicin X_2,
3,2′,6′-tri-N-R-3″-N-Z Antibiotic G-52,
3,2′,6′-tri-N-R-3″-N-Z Antibiotic 66-40B,
3,2′,6′-tri-N-R-3″-N-Z Antibiotic 66-40D,
3,2′,di-N-R-3″-N-Z Antibiotic G-418,
3,2′,6′-tri-N-R-3″-N-Z Antibiotic JI-20A,
3,2′,6′-tri-N-R-3″-N-Z Antibiotic JI-20B,
3,6′-di-N-R-3″-N-Z-kanamycin A,
3,2′,6′-tri-N-R-3″-N-Z-kanamycin B,
3,2′,6′-tri-N-R-3″-N-Z-3′,4′-dideoxykanamycin B,
3,2′,6′-tri-N-R-3″-N-Z-verdamicin,
3,2′,6′-tri-N-R-3″-N-Z-sisomicin,
3,2′,6′-tri-N-R-3″-N-Z-tobramycin, and

the 5-epi, 5-deoxy, 5-epi-fluoro-5-deoxy analogs of the foregoing wherein R is lower alkanoyl, benzoyl, lower alkoxycarbonyl, trichloroethoxycarbonyl, benzyloxycarbonyl, and Z is lower alkanoyl.

4,282,351

CHITOSAN-GLUCAN COMPLEX, METHOD FOR ITS PRODUCTION AND END USES

Riccardo Muzzarelli, Ancona-sap-Anico, Italy, assignor to Anic, S.p.A., Palermo, Italy

Filed Jun. 4, 1979, Ser. No. 45,002

Claims priority, application Italy, Jun. 14, 1978, 625 A/78

Int. Cl.[3] C08B *37/08;* C07G *7/00*

U.S. Cl. 536—20 6 Claims

1. A method of producing the chitosan-glucan complex having the infrared spectrum shown in FIG. 1 A comprising treating a biomass selected from yeast, mold and fungus containing chitin and glucan with a solution of a strong alkali having a concentration of 30 to 50% at a temperature up to the boiling point of said solution.

4,282,352

ADENOSINE TRIPHOSPHATE DERIVATIVE

Kazutomo Imahori, Tokyo, and Kosuke Tomita, Matsudo, both of Japan, assignors to Unitika Ltd., Amagasaki, Japan

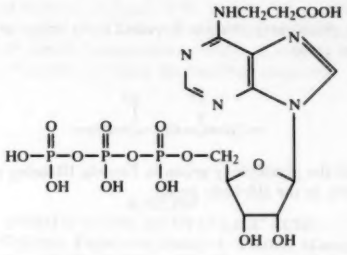
Filed Nov. 7, 1979, Ser. No. 91,996

Claims priority, application Japan, Nov. 8, 1978, 53/138123

Int. Cl.[3] C07H *17/00*

U.S. Cl. 536—27 3 Claims

1. An adenosine triphosphate derivative represented by the formula:



and alkali metal salts thereof.

4,282,353

PROCESS FOR THE PREPARATION OF UNSATURATED KETONES CONTAINING GLYCIDYL GROUPS

George E. Green, Stapleford, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

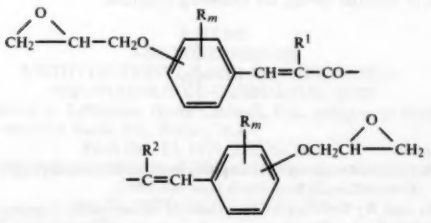
Filed Nov. 19, 1979, Ser. No. 95,873

Claims priority, application United Kingdom, Nov. 30, 1978, 46657/78

Int. Cl.[3] C07D *301/00*

U.S. Cl. 542—438 9 Claims

1. Process for the preparation of diglycidyl unsaturated ketones, in high yield and purity of the general formula

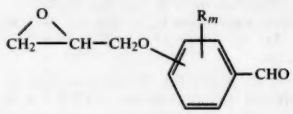


I

which comprises condensation of one molar equivalent of a ketone of formula

II

with two molar equivalents of a glycidyloxybenzaldehyde of formula



III

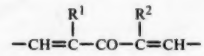
in the presence of a basic catalyst, where

R represents a straight chain or branched alkyl or alkoxy group having from 1 to 5 carbon atoms, an alkenyl group having from 2 to 5 carbon atoms, a carbalkoxy group having from 2 to 10 carbon atoms, a cycloalkyl group having from 5 to 8 carbon atoms, a halogen atom, a nitro group, or a carboxyl, sulfonic acid, or phosphonic acid group in the form of a salt,

m represents zero or a positive integer of from 1 to 4, and when m is greater than 1 the groups represented by R on the same aromatic ring may be the same or different, and

R^1 and R^2, which may be the same or different, separately represent a hydrogen atom or an alkyl group of from 1 to 5 carbon atoms, or R^1 and R^2 together form a straight chain or branched alkylene group of from 2 to 6 carbon atoms,

each glycidyloxy group in formula I being ortho- or para- to the group



and the glycidyloxy group in formula III being ortho or para- to the aldehyde group.

4,282,354

ELECTROPHORETIC MIGRATION IMAGING PROCESS

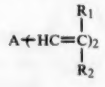
James A. Van Allan; Louis J. Rossi, both of Rochester; Melvin S. Bloom, Penfield; Michael T. Regan, Fairport; Hal E. Wright, and Joseph Y. Kaukeinen, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 889,715, Mar. 24, 1978, Pat. No. 4,165,984, which is a division of Ser. No. 804,042, Jun. 6, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 30,973

Int. Cl.³ C07D *407/10, 333/76;* **C07C** *121/62*

U.S. Cl. 542—441 **2 Claims**

1. A material having the following structure:



wherein

A represents phenylene, naphthylene, anthracenediyl and dibenzothiendiyl;

R_1 and R_2 both represent cyano or when taken together represent sufficient atoms to form a substituted or unsubstituted furanylidene and said substituents are selected from the group consisting of cyano, phenyl, nitrophenyl and oxo.

4,282,355

PROCESS FOR THE MANUFACTURE OF BIS-BENZOXAZOLYL-STILBENE COMPOUNDS

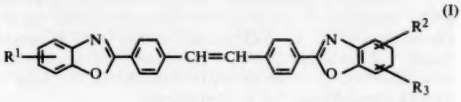
Rüdiger Erckel, and Peter Jürges, both of Eppstein, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,296

Int. Cl.³ C07D *413/10*

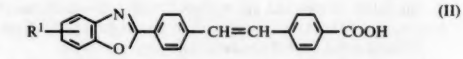
U.S. Cl. 542—459 **1 Claim**

1. Process for the manufacture of bis-benzoyloxazolyl-stilbene compounds of the formula I



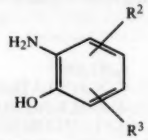
(I)

in which R^1, R^2 and R^3, independent of one another, denote hydrogen, C_1–C_9 alkyl, carbo-C_1–C_4 alkoxy and trifluoromethyl, at least two of the radicals R^1, R^2 and R^3 being hydrogen, by chlorination of an acid of the formula II



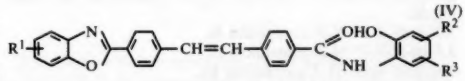
(II)

in which R^1 is as defined under formula I, in an inert organic solvent and subsequent reaction with an aminophenol of the formula III



(III)

in which R^2 and R^3 are as defined under formula I, which comprises adding the aminophenol in the form of a solution in an aprotic, dipolar solvent, preparing the compound of the formula IV



(IV)

in which R^1, R^2 and R^3 are as defined under formula I by acylation and preparing therefrom the compound of the formula I by cyclization after addition of an acid catalyst.

4,282,356

INTERMEDIATES FOR HETEROCYCLIC IMINES HAVING HYPOLIPIDAEMIC ACTIVITY

Barrie C. C. Cantello, Redhill, England, assignor to Beecham Group Limited, Great Britain

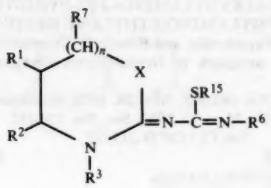
Division of Ser. No. 94,100, Nov. 14, 1979. This application Jun. 10, 1980, Ser. No. 158,212

Claims priority, application United Kingdom, Nov. 29, 1978, 46531/78; May 5, 1979, 15737/79

Int. Cl.³ C07D *263/06, 265/06, 277/04, 279/06*

U.S. Cl. 544—53 **14 Claims**

1. An intermediate of formula (IV) or a salt thereof:



(IV)

wherein

R^1 and R^2 are the same or different and represent hydrogen, C_{1-6} alkyl, phenyl, benzyl or C_{3-6} cycloalkyl;

R^3 is hydrogen, C_{1-6} alkyl, phenyl or benzyl;

R^6 is phenyl optionally substituted with up to three (3) groups selected from halogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkanoyl, C_{1-6} alkanoyloxy, nitro, hydroxy, amino, substituted amino, carboxy and C_{1-6} alkoxycarbonyl;

R^7 is hydrogen or C_{1-6} alkyl;

n is zero or 1;

X is oxygen or sulphur; and

R^{15} is C_{1-6} alkyl.

4,282,357

AQUEOUS CHEMILUMINESCENT SYSTEMS

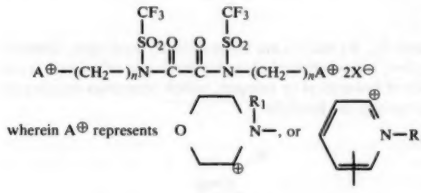
Shin-Shyong Tseng, and Michael M. Rauhut, both of Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 956,567, Nov. 1, 1978, Pat. No. 4,226,738. This application Feb. 19, 1980, Ser. No. 122,621

Int. Cl.³ C07D *213/04, 265/30*

U.S. Cl. 544—85 **8 Claims**

1. A water-soluble amide of oxalic acid represented by the formula:



(I)

wherein $A^{\oplus}$ represents

wherein R_1 represents hydrogen, or alkyl (C_1–C_6), n is an integer from 2 to 6, and $X^{\ominus}$ is an anion.

4,282,358

PROCESS FOR THE PRODUCTION OF SUBSTITUTED N-METHYLBENZOXAZINES

Claus D. Weis, Pfeffingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

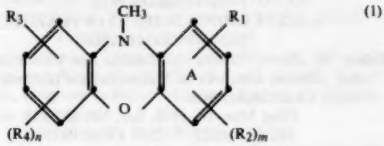
Filed Dec. 31, 1979, Ser. No. 108,855

Claims priority, application Switzerland, Jan. 10, 1979, 216/79

Int. Cl.³ C07D *265/38, 498/04*

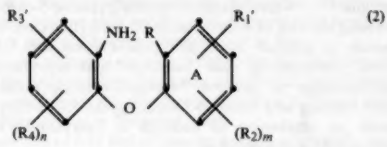
U.S. Cl. 544—101 **5 Claims**

1. A process for the production of a N-methylbenzoxazine of the formula



(1)

wherein the ring A can also contain a nitrogen atom as ring member, each of R_1 and R_3 independently is hydrogen, lower alkyl, halogen, nitro or trifluoromethyl, each of R_2 and R_4 independently is hydrogen or halogen, and each of m and n is an integer from 1 to 3, which process comprises cyclising a compound of the formula



(2)

wherein A, R_2, R_4, m and n are as defined for formula (1), R is chlorine or bromine, and each of R_1' and R_3' independently is hydrogen, lower alkyl, halogen or trifluoromethyl, in the presence of dimethylmethanephosphonate, at reflux temperature, and, if desired, nitrating the resulting compound.

4,282,359

PURIFICATION OF CYANURIC ACID

Basil A. Guiliano, Plainsboro; Henry A. Pfeffer, Mercerville, and Andrew D. Kurtz, Somerville, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 31, 1980, Ser. No. 135,948

Int. Cl.³ C07D *251/32*

U.S. Cl. 544—192 **14 Claims**

1. A process for recovering solid cyanuric acid in a more purified state from a slurry of solid cyanuric acid in an inert solvent containing dissolved urea and/or biuret and in which solvent the cyanuric acid is insoluble, which comprises mechanically separating the solid cyanuric acid from the slurry while maintaining the slurry at a temperature greater than about 170° C.

4,282,360

7-METHYLTHIO OR METHYLSULFINYL-5-OXO-5H-THIAZOLO[2,3-B]QUINAZOLINE-2-CARBOXYLIC ACID

Ronald A. LeMahieu, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 12, 1979, Ser. No. 84,471

The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.

Int. Cl.³ C07D *513/14, 239/72, 495/04*

U.S. Cl. 544—250 **3 Claims**

1. A compound of the formula, 7-methylthio-5-oxo-5H-thiazolo[2,3-b]quinazoline-2-carboxylic acid, 7-methylsulfinyl-5-oxo-5H-thiazolo[2,3-b]quinazoline-2-carboxylic acid or a salt thereof with a pharmaceutically acceptable base.

4,282,361
SYNTHESIS FOR 7-ALKYLAMINO-3-METHYLPYRAZOLO [4,3-D]PYRIMIDINES

Sidney M. Hecht, Newtonville, Mass., and Ulrich Jordis, Vienna, Austria, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 16, 1978, Ser. No. 887,383
Int. Cl.³ A61K *31/505;* C07D *487/04*
U.S. Cl. 544—262 **4 Claims**

1. In a method for synthesizing 7-alkylamino-3-methylpyrazoio[4,3-d]pyrimidines, including the steps of esterifying 3-methyl-4-nitropyrazole-5-carboxylic acid to ethyl 3-methyl-4-nitropyrazole-5-carboxylate, forming 3-methyl-4-nitropyrazole-5-carboxamide from ethyl 3-methyl-4-nitropyrazole-5-carboxylate, catalytically reducing and formylating ethyl 3-methyl-4-nitropyrazole-5-carboxamide to produce 4-formylamino-3-methylpyrazole-5-carboxamide, closing the ring of 4-formylamino-3-methylpyrazole-5-carboxamide to produce 3-methyl-7-hydroxypyrazolo[4,3-d]pyrimidine, chlorinating said 3-methyl-7-hydroxypyrazolo [4,3-d]pyrimidine to produce 7-chloro-3-methylpyrazolo-[4,3-d], and reacting said 7-chloro-3-methylpyrazolo[4,3-d]pyrimidine with an alkylamine to produce a 7-alkylamino-3-methylpyrazolo[4,3-d]pyrimidine:

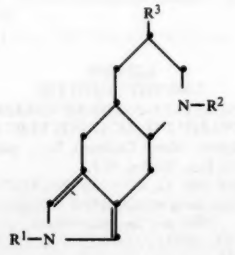
the improvement wherein ethyl 3-methyl-4-nitropyrazole-5-carboxamide is simultaneously catalytically reduced and formylated to produce 4-formylamino-3-methylpyrazole-5-carboxamide and the ring of 4-formylamino-3-methylpyrazolo-5-carboxamide is intramolecularly closed to produce 3-methyl-7-hydroxypyrazolo[4,3-d].

4,282,362
OCTAHYDRO-2H-PYRROLO[3,4-g]QUINOLINES

Nicholas J. Bach, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 31,642, Apr. 19, 1979, Pat. No. 4,235,909, which is a continuation-in-part of Ser. No. 5,062, Jan. 22, 1979, abandoned. This application Apr. 18, 1980, Ser. No. 141,750
Int. Cl.³ C07D *471/04*
U.S. Cl. 546—84 **4 Claims**

1. A compound of the formula



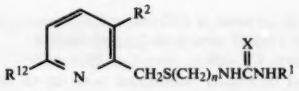
wherein R^1 is H, or $(C_1–C_3)$alkyl, R^2 is H, $C_1–C_3$ alkyl, allyl or benzyl and R^3 is $COO(C_1–C_3)$ alkyl, COOH, or CH_2X wherein X is CN, $CONH_2$, SCH_3, SO_2CH_3, or OCH_3 or a pharmaceutically acceptable acid addition salt thereof.

4,282,363
1-NITRO-2-(2-ALKYNYLAMINO)-2-[(2-PYRIDYLMETHYLTHIO)-ETHYLAMINO]ETHYLENE DERIVATIVES

Aldo A. Algieri, Fayetteville, and Ronnie R. Crenshaw, Dewitt, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 963,477, Nov. 24, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 129,157
Int. Cl.³ C07D *213/38*
U.S. Cl. 546—332 **8 Claims**

1. A compound of the formula



I

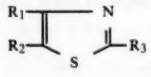
wherein R^1 is a straight or branched chain alkynyl group containing from 3 to 9 carbon atoms, inclusive; R^2 is hydrogen, hydroxy, cyano, (lower)alkyl, (lower)alkoxy, halogen or amino; n is 2 or 3; X is $CHNO_2$; R^{12} is hydrogen or $(CH_2)_pNR^{13}R^{14}$; p is an integer of from 1 to 4, inclusive; and R^{13} and R^{14} each are independently hydrogen or (lower)alkyl or a nontoxic, pharmaceutically acceptable salt thereof.

4,282,364
PROCESS FOR THE PREPARATION OF THIAZOLES

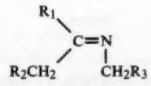
Joseph S. Amato, Brooklyn, N.Y.; Sandor Karady, Mountanside, and Leonard M. Weinstock, Belle Mead, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 22, 1980, Ser. No. 152,281
Int. Cl.³ C07D *277/25*
U.S. Cl. 548—202 **11 Claims**

1. A process for the preparation of a compound having the formula



wherein R_1, R_2 and R_3 are independently hydrogen, loweralkyl, phenyl or substituted phenyl wherein the substituent is one or two of loweralkyl or halogen, which comprises reacting an imine having the formula:



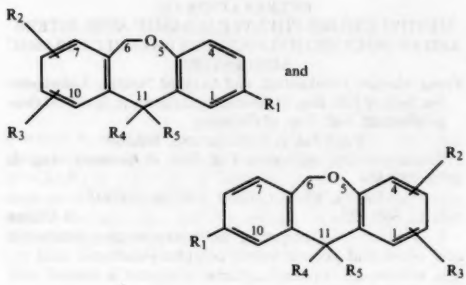
wherein R_1, R_2 and R_3 are as defined above, with sulfur dioxide in the presence of a catalyst consisting of a mixture of from 0.1 to 2% by weight of zirconium oxide, from 85 to 98% by weight of an alkaline earth metal oxide and from 1 to 15% by weight of an alkali metal hydroxide.

4,282,365
DIBENZ[B,E]OXEPIN COMPOUNDS

Joshua Rokach, Chomedey-Laval, Canada; Edward J. Cragoe, Jr., Lansdale, and Clarence S. Rooney, Worcester, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 24, 1978, Ser. No. 963,705
Int. Cl.³ C07P *313/12;* C07D *233/40, 405/10*
U.S. Cl. 548—252 **17 Claims**

1. A compound selected from the group consisting of 6,11-dihydrodibenz[b,e]oxepins having the structural formulae:



wherein

R_2 and R_3 are the same or different and are members selected from the group consisting of hydrogen, halogen, nitro, amino, N-lower alkylamino, N,N-dilower alkylamino, lower alkanoyl, hydroxy, lower alkoxy, lower alkylthio, trifluoromethylthiol, lower alkylsulfinyl, lower alkylsulfonyl and trifluoromethyl; and where R_2 and R_3 are on adjacent carbon atoms at positions 8 and 9 or 2 and 3, R_2 and R_3, taken together, are methylenedioxy;

R_4 is a member selected from the group consisting of hydrogen, hydroxy, loweralkoxy, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, phenylthio, amino, formamido, and 1-imidazolyl;

R_5 is a member selected from the group consisting of hydrogen and lower alkyl;

R_4 and R_5, taken together, are a member selected from the group consisting of =O and =CH-R_7 wherein R_7 is a member selected from the group consisting of hydrogen and phenyl; and

R_1 is a member selected from the group consisting of 5-tetrazolyl and carboxy; with the proviso that R_1 is not 5-tetrazolyl, carboxy or carboxamido when R_4 and R_5, taken together, are =O and R_2 and R_3 are hydrogen;

and the pharmaceutically acceptable salts thereof.

4,282,366

ORGANOSILICON QUATERNARY AMMONIUM ANTIMICROBIAL COMPOUNDS

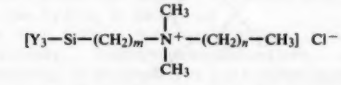
William W. Eudy, Cornwall-on-Hudson, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Nov. 6, 1979, Ser. No. 91,749

Int. Cl.³ C07F *7/10*

U.S. Cl. 556—413 **3 Claims**

1. A compound of the formula:



wherein m+n is 16 to 19, m is 1 or 4 to 6 and n is 13 to 17 or m+n is 20 to 23, m is 4 to 11 and n is 9 to 17; and Y is a hydrolyzable radical or hydroxy group.

4,282,367

PROCESS FOR THE SEPARATION OF POLYURETHANE FOAM HYDROLYSATES INTO POLYOL AND DIAMINE

Georg Niederdellmann, Dormagen; Norbert Roemer, Monchen-Gladbach, and Ernst Grigat, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 19, 1979, Ser. No. 105,059

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1978, 2854940

Int. Cl.³ C08G *18/48, 18/14*

U.S. Cl. 260—2.3 **2 Claims**

1. A process for the separation of propylene oxide/ethylene oxide-based polyether polyurethane hydrolysates into polyamines and polyols which can be used again for the production of polyurethanes, comprising introducing gaseous hydrogen chloride into the hydrolysate mixture which has optionally been diluted with an inert solvent, and removing the precipitated amine salt by filtration, characterized in that:

(A) gaseous hydrogen chloride is optionally first introduced into the hydrolysate in a quantity of from 0.02 to 0.07 mol per amine equivalent, the reaction mixture is filtered and the filter residue is discarded, then

(B) from 0.20 to 0.47 mol of gaseous hydrogen chloride, per mol of amine equivalents still present is introduced into the filtrate and the precipitated amine salt is filtered off, then

(C) stage (B) is repeated one or more times until the amine group content in the filtrate is below 0.25% by weight, based on the solvent-free filtrate, and finally

(D) precipitation of the amine is completed by the introduction of from 0.5 to 1.0 mol of gaseous hydrogen chloride based on the amine equivalents remaining in the filtrates.

4,282,368

PREPARATION OF P-SUBSTITUTED AROMATIC CARBAMIC ACID ESTERS

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

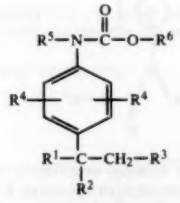
Filed Jun. 2, 1980, Ser. No. 155,762

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925480

Int. Cl.³ C07C *125/065, 125/067*

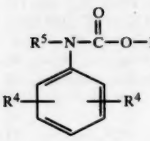
U.S. Cl. 560—24 **12 Claims**

1. A process for the preparation of a p-substituted, aromatic carbamic acid ester of the formula



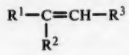
I

where the individual radicals R^1, R^2, R^3, R^4, R^5 and R^6 may be identical or different and each is an aliphatic radical, R^1, R^2 and R^3 may also each be a cycloaliphatic, araliphatic or aromatic radical, any 2 of the radicals R^1, R^2 and R^3 may also, conjointly with the adjacent carbon atoms, be members of an alicyclic ring, R^1, R^2 and R^3 conjointly with the adjacent carbon atoms may also be a bicyclic radical, R^2, R^3 and R^5 may also each be hydrogen, R^4 may also be hydrogen or halogen and R^6 may also be a cycloaliphatic radical, wherein an aromatic carbamic acid ester of the formula



II

where R^4, R^5 and R^6 have the above meanings, is reacted with an olefin of the formula



III

where R^1, R^2 and R^3 have the above meanings, in the presence of an inorganic acid or sulfonic acid.

4,282,369

DIURETHANES

Ulrich Schirmer, Heidelberg; Wolfgang Rohr, Mannheim; Bruno Wuerzer, and Kurt Fett, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 869,323, Jan. 13, 1978, Pat. No. 4,227,007. This application Oct. 31, 1979, Ser. No. 89,954

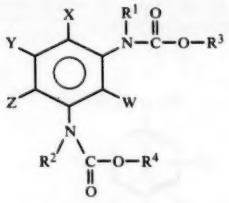
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1977, 2703838

The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.

Int. Cl.[3] **C07C** *125/04;* **A01N** *9/20*

U.S. Cl. 560—25 **2 Claims**

1.



where R^1 and R^2 are identical or different and each denotes hydrogen, alkyl, alkoxyalkyl, or haloalkyl, R^3 denotes unsubstituted alkyl, alkyl substituted by halogen, alkoxy, unsubstituted aryl or halogen-substituted aryl, unsubstituted or halogen-substituted alkenyl, unsubstituted or halogen- or alkoxy-substituted alkynyl, R^4 denotes unsubstituted or alkyl-substituted cycloalkyl, bicycloalkyl, tricycloalkyl, phenyl with fused ring system, phenyl, or mono- or polysubstituted phenyl with the substitutents alkyl, haloalkyl, alkoxyalkyl, cycloalkyl, halogen, alkoxy, or haloalkoxy, with the provisio that R^3 and R^4 are different and W, X, Y and Z are identical or different and each denotes hydrogen, alkyl, haloalkyl, alkoxy, halogen, nitro and amino.

4,282,370

PREPARATION OF METHYLENE-BIS-PHENYLCARBAMIC ACID ESTERS AND OF POLYMETHYLENE-POLYPHENYLCARBAMIC ACID ESTERS

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,568

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1979, 2931554

Int. Cl.[3] **C07C** *125/073, 118/00, 119/048*

U.S. Cl. 560—25 **4 Claims**

1. A process for preparing methylene-bis-phenylcarbamic acid esters and polymethylene-polyphenylcarbamic acid esters, wherein an N-phenylcarbamic acid ester is reacted with an acylal of the formula

$$CH_2(OCOR)_2$$

where R is alkyl, in the presence of an acid at from 50° to 150° C.

4,282,371

SELECTED AMINOESTER DERIVATIVES OF TRICHLOROACETONITRILE

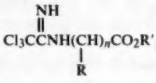
Eugene F. Rothgery, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 28, 1980, Ser. No. 144,744

Int. Cl.[3] **C07C** *101/24;* **A01N** *37/50*

U.S. Cl. 560—35 **8 Claims**

1. A compound of the formula:



wherein R is hydrogen, lower alkyl having 1 to 4 carbon atoms, phenyl, benzyl, and substituted phenyl and benzyl in which said phenyl ring substituents are selected from the group consisting of lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, halo, hydroxy, nitro, amino and mixtures thereof; wherein R' is a lower alkyl having 1 to 4 carbon atoms and n is 1 or 2.

4,282,372

PROCESS FOR PRODUCING CYCLOPENTENOLONES

Takashi Matsuo, Itami, and Kazunori Tsushima, Nishinomiya, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

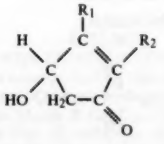
Filed Oct. 30, 1979, Ser. No. 89,351

Claims priority, application Japan, Nov. 1, 1978, 53-135386; Nov. 1, 1978, 53-135387; Nov. 15, 1978, 53-141410; Nov. 15, 1978, 53-141411

Int. Cl.[3] **C07C** *45/57, 67/00*

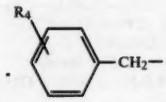
U.S. Cl. 560—121 **3 Claims**

1. A process for producing a cyclopentenolone derivative of the formula (I),

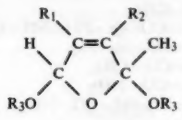


(I)

wherein R_1 is a hydrogen atom or a C_1–C_6 alkyl group, R_2 is a hydrogen atom, a C_1–C_8 alkyl group, a C_2–C_8 alkenyl group, a C_2–C_8 alkynyl group, a group of the formula,



in which R_4 is a hydrogen atom, a methyl group or a halogen atom, or a group of the formula, $-CH_2-CH=CH-(CH_2)_3-CO_2R_5$ or $-(CH_2)_6-CO_2R_5$ in which R_5 is a hydrogen atom or a C_1–C_4 alkyl group, and R_1 and R_2 are not a hydrogen atom at the same time, which comprises reacting a novel substituted furan derivative of the formula (II),



(II)

wherein R_1 and R_2 are as defined above, and R_3 is a C_1–C_4 alkyl group, in a solvent under acidic conditions.

4,282,373

PROCESS FOR PREPARATION OF THIOPHENES

Angela W. Guest, Little Bookham; Andrew W. Taylor, Dorking, and Robert Ramage, Altrincham, all of England, assignors to Beecham Group Limited, England

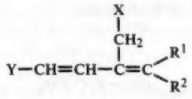
Division of Ser. No. 926,727, Jul. 21, 1978, Pat. No. 4,252,976. This application May 7, 1979, Ser. No. 36,407

Claims priority, application United Kingdom, Jul. 23, 1977, 31008/77

Int. Cl.³ C07C *69/602*

U.S. Cl. 560—181 **8 Claims**

1. A compound of the formula:



wherein

R^1 is

and

R^2 is the same or different

R^3 is hydrogen, alkyl of 1 to 6 carbon atoms, benzyl, phthalidyl, indanyl, phenyl or phenyl substituted with from 1 to 3 alkyl groups each of from 1 to 6 carbon atoms,

Y is halo, hydroxy or alkoxy, and

X is halo, hydroxy benzenesulphonyloxy, p-toluenesulphonyloxy, p-nitrobenzene-sulphonyloxy, alkylsulphonyloxy, or alkanoyloxy of 1 to 6 carbon atoms.

7. A compound according to claim **1** wherein

R^3 is hydrogen, alkyl of 1 to 6 carbon atoms or benzyl.

8. A compound according to claim **7** wherein R_3 is hydrogen, methyl, ethyl or benzyl.

4,282,374

PREPARATION OF GLYOXAL FROM ETHYLENE GLYCOL

Heinz Engelbach, Limburgerhof, and Michael J. Sprague, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,871

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1978, 2832405

Int. Cl.³ C07C *45/65*

U.S. Cl. 568—471 **4 Claims**

1. A process for the preparation of glyoxal by vapor phase oxidation of ethylene glycol with an oxygen-containing gas in the presence of a copper-containing oxidation catalyst at a temperature of from about 225° to about 500° C., wherein the vapor phase oxidation is carried out in the presence of a phosphorus compound having a boiling point of less than about 500° C. under the reaction conditions, the amount of phosphorus (calculated as P) being from 1 to 100 ppm, based on the weight of ethylene glycol.

4,282,375

HALOGENATED-NAPHTHALENETRIYLTRIS(SULFONYLIMINO)-ARYL MULTICARBOXYLIC ACIDS AND SALTS THEREOF

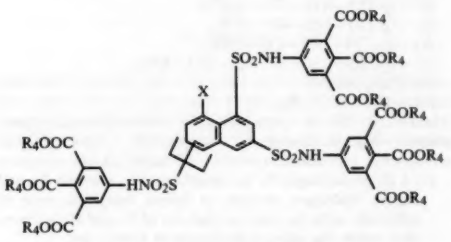
Seymour Bernstein, New City, and John F. Poletto, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 106,611

Int. Cl.³ C07C *143/75*

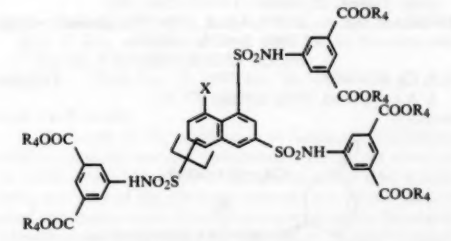
U.S. Cl. 562—427 **6 Claims**

1. A compound of the formula:



wherein R_4 is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; and X is halogen.

2. A compound of the formula:



wherein R_4 is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; and X is halogen.

4,282,376

13,14-DIHYDRO-11-DEOXY-9-DEOXY-9-METHYLENE-19-OXO-PGF$_2$ COMPOUNDS

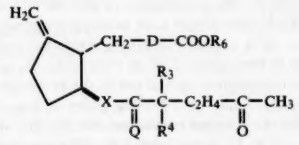
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,733

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—, or

(4) trans—(CH$_2$)$_3$—CH=CH—;

wherein g is zero, one, two, or three;

wherein Q is α—OH:β—R$_5$ or α—R$_5$:β—OH, wherein R$_5$ is hydrogen or methyl;

wherein R$_6$ is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH$_3$,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH$_3$,

(i) —(p-Ph)—NH—CO—(p-Ph),

(j) —(p-Ph)—NH—CO—CH$_3$,

(k) —(p-Ph)—NH—CO—NH$_2$,

(l) —(p-Ph)—CH=N—NH—CO—NH$_2$,

(m) β-naphthyl,

(n) —CH$_2$—CO—R$_{28}$,

wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R$_{28}$ is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro; and

wherein X is —CH$_2$CH$_2$—.

4,282,377

13,14-DIHYDRO-11-DEOXY-19-OXO-PGE$_2$ COMPOUNDS

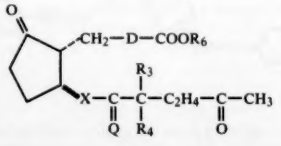
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,734

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—, or

(4) trans—(CH$_2$)$_3$—CH=CH—;

wherein g is zero, one, two, or three;

wherein Q is α-OH:β-R$_5$ or α-R$_5$:β-OH, wherein R$_5$ is hydrogen or methyl;

wherein R$_6$ is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p—Ph)—CO—CH$_3$,

(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH$_3$,

(i) —(p—Ph)—NH—CO—(p—Ph),

(j) —(p—Ph)—NH—CO—CH$_3$,

(k) —(p—Ph)—NH—CO—NH$_2$,

(l) —(p—Ph)—CH=N—NH—CO—NH$_2$,

(m) β-naphthyl,

(n) —CH$_2$—CO—R$_{28}$,

wherein (P—Ph) is para-phenyl or inter-para-phenylene, wherein R$_{28}$ is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R$_3$ and R$_4$ are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R$_3$ and R$_4$ is fluoro only when the other is hydrogen or fluoro; and

wherein X is —CH$_2$CH$_2$—.

4,282,378

13,14-DIHYDRO-11-DEOXY-19-OXO-PGF$_2$ COMPOUNDS

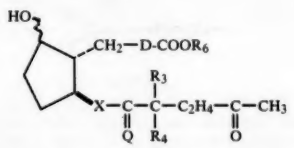
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,735

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is

(1) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CH$_2$—,

(2) cis—CH=CH—CH$_2$—(CH$_2$)$_g$—CF$_2$—,

(3) cis—CH$_2$—CH=CH—CH$_2$—CH$_2$—, or

(4) trans—(CH$_2$)$_3$—CH=CH—;

wherein g is zero, one, two, or three;

wherein Q is α-OH:β-R$_5$ or αR$_5$:β-OH, wherein R$_5$ is hydrogen or methyl;

wherein R$_6$ is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH$_3$,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH$_3$,

(i) —(p-Ph)—NH—CO—(p-Ph),

(j) —(p-Ph)—NH—CO—CH$_3$,

(k) —(p-Ph)—NH—CO—NH$_2$,

(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

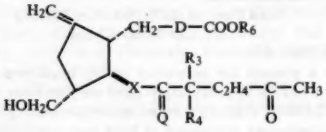
4,282,379

13,14-DIHYDRO-11-DEOXY-11-HYDROXYMETHYL-9-DEOXY-9-METHYLENE-19-OXO-PGF$_2$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,736
Int. Cl.^{3} C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) cis-CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis-CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis-CH_2—CH=CH—CH_2—CH_2—, or
(4) trans-$(CH_2)_3$—CH=CH—;
wherein g is zero, one, two, or three;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)'CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein (p-Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —CH_2CH_2—.

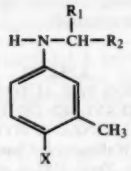
4,282,380

REDUCTIVE ALKYLATION AND DEHALOGENATION OF M-NITROBENZYL HALIDES

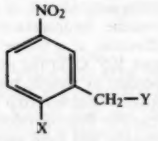
Albert W. Lutz, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 54,739
Int. Cl.^{3} C07C *85/08, 85/24*
U.S. Cl. 564—398 **5 Claims**

1. A process for the preparation of a compound of formula:



wherein R_1 and R_2 each are alkyl C_1–C_4 and may be the same or different; X is alkyl C_1–C_4, comprising: reductively alkylating and dehalogenating in one step a compound of formula:



wherein Y is chlorine or bromine, and X is as hereinabove defined, by reacting same with an equimolar or excess amount of a ketone of formula:

wherein R_1 and R_2 are as hereinabove defined, and with hydrogen used in the presence of platinum catalyst at a temperature ranging from 20° to 100° C. and at a pressure range of from 10 psig. to 80 psig.; for a period of time sufficient to essentially complete the reaction.

4,282,381

PROCESS FOR PURIFYING HEXAMETHYLENEDIAMINE

Oscar R. Buehler, Newark, and Harold F. Porter, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 21, 1980, Ser. No. 179,949
Int. Cl.^{3} C07C *85/26*
U.S. Cl. 564—498 **8 Claims**

1. A process for the purification of hexamethylenediamine which comprises absorbing substantially anhydrous ammonia in molten crude hexamethylenediamine in a first zone, volatilizing a portion of the dissolved ammonia in a second zone to cool and thereby crystallize at least a portion of the hexamethylenediamine, separating the crystalline hexamethylenediamine from the molten hexamethylenediamine in a third zone, and thereafter washing the thus obtained crystalline diamine with refined molten hexamethylenediamine.

4,282,382

PRODUCTION OF CYCLOHEXYLBENZENE HYDROPEROXIDE

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 2, 1979, Ser. No. 54,081
Int. Cl.³ C07C *179/03*
U.S. Cl. 568—570 **13 Claims**

1. A process for preparation of cyclohexylbenzene hydroperoxide comprising reacting cyclohexylbenzene with oxygen in a diluent consisting essentially of cyclohexane under conditions suitable for converting said cyclohexylbenzene to cyclohexylbenzene hydroperoxide.

4,282,383

PROCESS FOR THE AUTOXIDATION OF CYCLOHEXYLBENZENE TO FORM CYCLOHEXYLBENZENE HYDROPEROXIDE

Sheng-Hong A. Dai, Wallingford; Chung-Yuan Lin, Northford, and Fred A. Stuber, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 689,489, May 24, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 861,757
Int. Cl.³ C07C *179/03*
U.S. Cl. 568—573 **4 Claims**

1. A process for the autoxidation of cyclohexylbenzene to form cyclohexylbenzene hydroperoxide which comprises heating cyclohexylbenzene at a temperature in the range of about 80° C. to about 105° C. in the presence of oxygen and from about 2 to 6 percent by weight, based on cyclohexylbenzene, of a hydroperoxide selected from the class consisting of tertiary-butyl and cumene hydroperoxides and p-diisopropylbenzene dihydroperoxide, and from about 0.1 to 5 percent by weight, based on cyclohexylbenzene, of a free radical initiator selected from the group consisting of azobisisobutyronitrile, t-butylperbenzoate and dicumyl peroxide.

4,282,384

PREPARATION OF DIISOPROPYLEBENZENE HYDROPEROXIDE

Ching-Yong Wu, Fox Chapel Borough; Harold E. Swift, Gibsonia, and John E. Bozik, Plum Borough, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 5, 1980, Ser. No. 146,232
The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.
Int. Cl.³ C07C *179/035*
U.S. Cl. 568—574 **11 Claims**

1. A process for oxidizing diisopropylbenzene to a mixture of mono- and diisopropylbenzene hydroperoxide comprising heating o-diisopropylbenzene, m-diisopropylbenzene, p-diisopropylbenzene or a mixture thereof in contact with about 0.0005 to about 0.1 weight percent barium oxide at a temperature between about 70° C. and about 130° C. under substantially anhydrous conditions and contacting said diisopropylbenzene with molecular oxygen.

4,282,385

HYPERACIDIC SOLID METAL LACTATES AND PROCESS FOR PRODUCING SAME

Ulrich Metz, Seebruck, Austria, and Horst Michaud, Trostberg, Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Apr. 25, 1979, Ser. No. 33,000
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820942
Int. Cl.³ C07C *59/08*
U.S. Cl. 562—589 **12 Claims**

1. A hyperacidic, non-hygroscopic, non-caking, free-flowing solid metal lactate having the formula:

$$M(C_3H_5O_3)_x(C_3H_6O_3)_n$$

wherein x corresponds to the equivalence of the metal M, M is selected from the group consisting of lithium and alkaline earth metals, and n is a number from 4 to 12.

4,282,386

ALKYL, CYCLOALKYL DIETHERS OF (POLY)ALKYLENE GLYCOLS

Felipe A. Donate, and Zonia G. Cutie, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 2, 1980, Ser. No. 145,918
Int. Cl.³ C07C *41/05*
U.S. Cl. 568—606 **4 Claims**

1. A process for production of a glycol diether of the formula $R_1O\text{-}(\text{-}CHR'CHR''O\text{-})_nR_2$ where R_1 is phenyl or C_{1-4} alkyl; R′ and R″ are independently in each alkyleneoxy unit hydrogen or methyl, provided that at most only one of R′ or R″ is methyl in each alkyleneoxy unit; n is an integer from 1 to 6; and R_2 is C_{5-6} cycloalkyl by reacting one or more glycol monoalkyl ethers of the formula $R_1O\text{-}(\text{-}CHR'CHR''O\text{-})_nH$ where R_1, R′, R″ and n are as previously defined with cyclopentene or cyclohexene in the presence of a synthetic ion-exchange resin in the acid form at a temperature from about 100° C. to about 150° C. under autogenous pressure for a time sufficient to form the desired product.

4,282,387

PROCESS FOR PREPARING POLYOLS

Franciszek Olstowski, Freeport, and John L. Nafziger, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 26, 1979, Ser. No. 107,242
Int. Cl.³ C08G *65/28*
U.S. Cl. 568—618 **18 Claims**

1. In a process for preparing active hydrogen-containing polymers having hydroxyl equivalent weights from about 50 to about 12,500 by reacting a mono-epoxy-containing compound with a compound containing at least one active hydrogen in the presence of a catalytic quantity of a catalyst, and in the absence of a solvent or diluent other than the reactants and reaction products; the improvement wherein the catalyst is added in the form of an organic carboxylic acid salt of calcium, barium, strontium, or mixture thereof and wherein said organic acid has at least 2 carbon atoms.

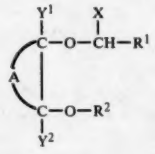
4,282,388

CYCLIC 1,2-DIOL BENZYL ETHER COMPOUNDS

Wilfried Draber; Wolf Reiser; Thomas Schmidt, all of Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,415
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753556; Sep. 28, 1978, 2842188
Int. Cl.³ C07C *43/188, 43/192*
U.S. Cl. 568—660 **28 Claims**

1. Benzyl ether of cyclic 1,2-diols, of the formula



(I)

wherein

R^1 is phenyl or substituted phenyl, which substituents are selected from the group consisting of halogen, alkyl, alkoxy with up to 4 carbon atoms, haloalkyl, haloalkoxy with

up to 4 carbon atoms each and up to 5 halogen atoms, trimethylene, tetramethylene or pentamethylene groups, and phenyl, and phenoxy, the last two radicals being optionally substituted by halogen, alkyl or alkoxy with 1 to 2 carbon atoms each or haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms;

R^2 is alkyl with 1 to 8 carbon atoms, alkenyl or alkynyl with 2 to 4 carbon atoms each, haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms or the grouping —CHX—R^1 wherein X is defined as below;

X is hydrogen, alkyl with 1 to 4 carbon atoms, alkenyl, or alkynyl with 2 to 4 carbon atoms, haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms, phenyl or substituted phenyl, the substitutents being selected from halogen, alkyl or alkoxy with 1 or 2 carbon atoms each or haloalkyl with up to 2 carbon atoms and up to 3 identical or different halogen atoms;

Y^1 and Y^2 are individually selected from hydrogen, alkyl with 1 to 6 carbon atoms or phenyl or substituted phenyl, the substituents being selected from halogen, alkyl or alkoxy with 1 to 4 carbon atoms or haloalkyl or haloalkoxy with up to 4 carbon atoms each and up to 5 halogen atoms and

A is a 2- or 6-membered saturated or unsaturated alkyllene bridge or substituted alkylene bridge, the substituents being slected from halogen, alkyl with 1 to 6 carbon atoms, phenyl and substituted phenyl, the substituents being selected from halogen, alkyl or alkoxy with up to 4 carbon atoms each, haloalkyl or haloalkoxy with up to 4 carbon atoms each and up to 5 halogen atoms each.

4,282,389

PROCESS FOR THE SIMULTANEOUS MANUFACTURE OF PURE MTBE AND A SUBSTANTIALLY ISOBUTENE-FREE MIXTURE OF C_4-HYDROCARBONS

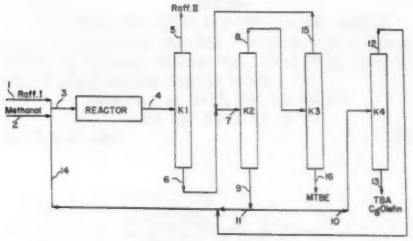
Wilhelm Droste, and Fritz Obenaus, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls A.G., Marl, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,058

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853769

Int. Cl.³ C07C *41/12*

U.S. Cl. 568—697 **6 Claims**



1. In a process for the simultaneous manufacture of pure methyl tertiary butyl ether and a substantially isobutene-free mixture of C_4-hydrocarbons, by reacting isobutene contained in a mixture of C_4-hydrocarbons with excess methanol in the liquid phase at elevated temperatures on strongly acid, macroporous, organic ion exchange resins, the improvement comprising:

(a) reacting said methanol and said isobutene in a molar ratio of 2:1 to 5:1 at temperatures of between about 30° and 100° C.;

(b) removing unconverted hydrocarbons as the top product under a pressure of 2 to 10 bars from a first rectification column;

(c) rectifying the bottom product from said first rectification column in a second column under a pressure of about normal pressure to a pressure of about 2 bars excess at the top of the second column and recycling the bottom product of said second column to step (a); and

(d) rectifying the distillate from said second column consisting essentially of an azeotrope of methanol and methyl tertiary butyl ether in a third rectification column under a pressure of about 5 to 30 bars without adding auxiliary material, recycling the distillate of said third column into the feed of said second column and withdrawing said pure methyl tertiary butyl ether from the bottom of said third column.

4,282,390

2,6-BENZYL SUBSTITUTED PHENOLS

Errol J. McGarry, Bundoora, and Bruce A. Forsyth, Croydon, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Division of Ser. No. 812,471, Jul. 5, 1977, Pat. No. 4,163,801. This application Mar. 30, 1979, Ser. No. 25,675

Claims priority, application Australia, Jul. 7, 1976, PC6576

Int. Cl.³ C07C *39/15*

U.S. Cl. 568—720 **7 Claims**

1. A compound selected from the group consisting of:
2,6-bis(2-hydroxy-3-bromo-5-fluorobenzyl)-4-chlorophenol;
2,6-bis(2-hydroxy-3-bromo-5-chlorobenzyl)-4-fluorophenol;
2-(2-hydroxy-3-bromo-5-fluoro-α-methylbenzyl)-6-(2-hydroxy-3-bromo-5-fluorobenzyl)-4-chlorophenol;
2,6-bis(2-hydroxy-3-bromo-5-fluorobenzyl)-4-fluorophenol;
2,6-bis(2-hydroxy-3-iodo-5-chlorobenzyl)-4-fluorophenol; or
2,6-bis(2-hydroxy-3-iodo-5-fluorobenzyl)-4-fluorophenol.

4,282,391

CONTINUOUS PROCESS FOR PRODUCING HALOGENATED DIPHENOLS

Clayton B. Quinn, Mt. Vernon, Ind., and Charles A. Wilson, II, Greenville, S.C., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 882,192, Feb. 28, 1978. This application Dec. 10, 1979, Ser. No. 101,841

Int. Cl.³ C07C *39/16, 43/23, 39/00*

U.S. Cl. 568—726 **8 Claims**

1. A process for halogenating a diphenol which comprises dissolving or suspending a diphenol in a solvent system comprising water and a primary solvent system member selected from the group consisting of methylene chloride and chlorobenzene, the weight ratio of said primary solvent system member to said diphenol being in the range of about 2:1–6:1 and weight ratio of water to said diphenol being in the range of about 2:1–5:1;

introducing a halogen into said solvent system, said halogen being introduced in an amount of about 0.1–2.0 moles per mole of said diphenol; and,

maintaining the pH of said solvent system at about pH 2–5 to obtain a predetermined statistical mixture of unhalogenated, monohalogenated, and dihalogenated diphenol with substantially reduced quantities trihalo and tetrahol substituted diphenol.

4,282,392

ALPHA-OLEFIN OLIGOMER SYNTHETIC LUBRICANT

Barrett L. Cupples, Franklin Township, Westmoreland County, Pa., and William J. Heilman, Houston, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 736,679, Oct. 28, 1976, abandoned, which is a division of Ser. No. 634,624, Nov. 24, 1975, Pat. No. 4,032,591. This application Jun. 19, 1978, Ser. No. 916,476

Int. Cl.² C07C *9/14*

U.S. Cl. 585—10 **6 Claims**

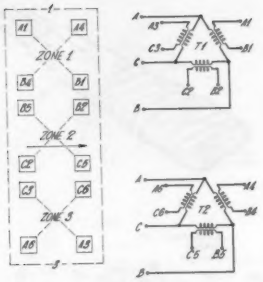
1. A lubricating oil comprising a hydrogenated mixture of normal 1-decene oligomers having a 210° F. viscosity between about 5.4 cs. and about 6.6 cs. and a −40° F. viscosity of at least about 5,500 cs. and comprising a maximum of about two percent dimer, a trimer to tetramer ratio no higher than about one to one and at least about 15 percent pentamer, and said trimer fraction having a maximum 210° F. viscosity of about 2,250 cs.

4,282,393

ELECTRODE MELTING-Z TYPE ELECTRODE FIRING WITH CONTINUOUS ZONES

Michael Williamson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 25, 1978, Ser. No. 954,493
Int. Cl.[3] C03B 5/02
U.S. Cl. 13—6 17 Claims



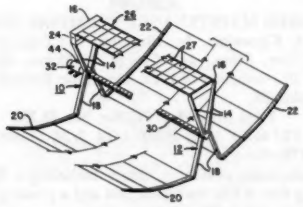
1. A furnace for heating a thermoplastic material, said furnace comprising: a container for said thermoplastic material; a first group of electrodes located in said container and having a first and second electrode; a second group of electrodes located in said container and having a first and second electrode, said first electrode of said first group being located adjacent said first electrode of said second group; a first power supply connected to said first and second electrodes of said first group; and a second power supply connected to said first and second electrodes of second group, said first and second power supplies being electrically connected to each other only through said thermoplastic material and having a phase shift therebetween so that the current paths within said thermoplastic material are substantially limited to flow between said first and second electrodes of each respective group.

4,282,394

UNDERWING REFLECTOR SOLAR ARRAY

James A. Lackey, Kent; Harold L. Nordwall, Mercer Island, and Charlie B. Whitney, Federal Way, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 24, 1979, Ser. No. 88,203
Int. Cl.[3] H01L 31/00
U.S. Cl. 136—245 7 Claims



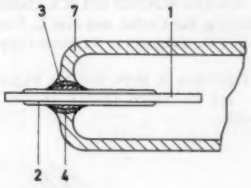
1. A solar array comprising a first frame for connection to a support member, a second complementary frame movable away from said first frame, each of said frames having upper and lower parallel support members with the upper and lower support members lying in common planes, a plurality of flat solar cell devices hinged together along hinges extending parallel to each other and adapted to extend from a folded condition wherein the solar cell devices are arranged in side-by-side bundled condition to an extended position wherein all cell devices lie in the same plane when said second frame moves away from the first frame, and strips of reflective material carried on the lower support member of said first frame, ends of said strips being connected to the lower support member of said second frame whereby the reflective strips will be extended as said second frame moves away from the first frame to provide a means for reflecting light onto said solar cells.

4,282,395

HIGH MELTING POINT GLASS-TO-METAL SEAL AND MELT CONNECTION, PARTICULARLY FOR TUNGSTEN SUPPLY WIRES FOR HIGH-PRESSURE DISCHARGE LAMPS

Josef Hagemann, Obereichstätt, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,259
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1978, 2833896
Int. Cl.[3] H01J 5/00
U.S. Cl. 174—50.61 18 Claims



1. High melting point glass-to-metal seal and melt connection subassembly in combination with a glass structure having a wall (7) to carry a metallic electrical rod-like conductor (1) having a first thermal coefficient of expansion essentially transversely through the glass wall (7), in which the glass has a thermal coefficient of expansion which is small with respect to said first coefficient of expansion,

said combination including

a plurality of layers of glass having progressively smaller thermal coefficients of expansion interposed between the rod-like conductor (1) and the glass wall (7), and in which the melting point of the glass forming said wall (7) is substantially higher than that of at least some of said glasses,

wherein said layers of glass comprise

a first glass (2) melted on and surrounding the conductor (1) and extending thereon over a predetermined axial length;

a further glass (3) melted on said first glass and being axially shorter than said first glass and positioned intermediate the length of the first glass;

and a glass cylinder (4) having a melting point at least substantially equal to that of the glass wall and substantially higher than that of the next adjacent further glass (3), melted on the further glass (3), the glass cylinder having an axial length which is approximately the same as the wall thickness of the wall (7).

4,282,396

HEAT-RECOVERABLE ARTICLES

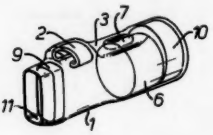
Didier J. M. M. Watine, Maisons-Laffitte; Jean P. M. Hine, Courbevoie; Jean M. H. Catabelle, St. Cloud, and Jean C. C. Delamotte, Franconville, all of France, assignors to Raychem Pontoise S.A., Saint Ouen L'Aumone, France

Filed May 22, 1979, Ser. No. 41,387

Claims priority, application United Kingdom, Mar. 9, 1979, 8459/79

Int. Cl.[3] H01R *4/02*

U.S. Cl. 174—84 R 59 Claims



1. An article which comprises a heat-shrinkable sleeve open at at least one end, and a quantity of solder positioned eccentrically within the sleeve and held by the sleeve, the solder being such that it does not extend round the entire inner circumference of any cross-section of the sleeve, the sleeve also having guide means for receiving and determining the radial location in the sleeve of an elongate substrate, the arrangement being such that when in use the elongate substrate is received in the guide means, a portion of the elongate substrate can be positioned in proximity to at least part of the quantity of solder.

4,282,397

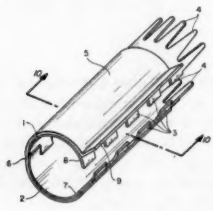
WRAPAROUND SPLICE CASE

Juergen Siedenburg, San Carlos, and Joel L. Fritsche, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 5, 1979, Ser. No. 91,344

Int. Cl.[3] H02G *15/113, 15/196*

U.S. Cl. 174—92 9 Claims



1. A splice case comprising:

(a) a hollow cylindrical shell of a relatively rigid material, said shell having an internal diameter sufficient to encircle a cable splice; and having at least one longitudinal split extending along the length thereof so that the shell can be opened to be placed about a cable splice and then closed to completely encircle the cable splice;

(b) a sheet of plastic material bonded to the outer surface of said shell; and

(c) a closure member which comprises an extension of said plastic sheet extending from one of the edges of said shell along said longitudinal split, said closure member being coated on the inner surface thereof with a heat activatable adhesive so that when the shell is placed about a cable splice and the closure member is placed in contact with said plastic material covering said shell and heated, the adhesive bonds the closure member to the plastic material, thereby forming a protective splice case.

4,282,398

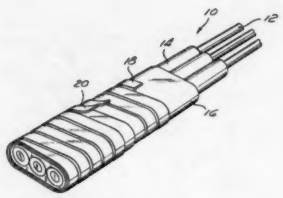
ANTI-HOLIDAY CABLE ARMOR

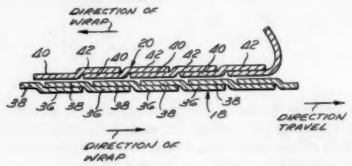
John H. Solomon, 7890 E. Spring St., Long Beach, Calif. 90813

Continuation of Ser. No. 950,428, Oct. 11, 1978, abandoned. This application Jul. 16, 1979, Ser. No. 57,736

Int. Cl.[3] H01B *7/22*

U.S. Cl. 174—106 R 2 Claims





1. In an electrical cable of the type comprising at least one electrical conductor surrounded by at least one electrical insulating covering and a metal armor covering enclosing the insulating covering, the improvement wherein the metal armor covering is a two-directional anti-holiday armor comprising a first metal strap having a depressed side and a raised side generally helically wrapped directionally from the first end of the cable toward the second end of the cable with the raised side of the strap overlapping the depressed side of the strap of the next preceding wrap to the helix to provide a non-snagging armor when the cable is pulled on one direction against a potentially snagging object, and a second metal strap having a depressed side and a raised side generally helically wrapped directionally from the second end of the cable toward the first end of the cable with the raised side of the second strap overlapping the depressed side of the second strap of the next preceding wrap of the helix of the second metal strip to provide a non-snagging armor when the cable is pulled in the opposite direction against a potentially snagging object.

4,282,399

SHARED MAINTENANCE TERMINAL SYSTEM

Herbert A. Kippenhan, Jr., Elmhurst, Ill.; Eugene E. Nelson, Shore View, Minn., and George T. Ricker, Jr., Downers Grove, Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed May 29, 1979, Ser. No. 43,290

Int. Cl.[3] G06F *3/12;* H04L *5/14, 5/24;* H04M *3/22*

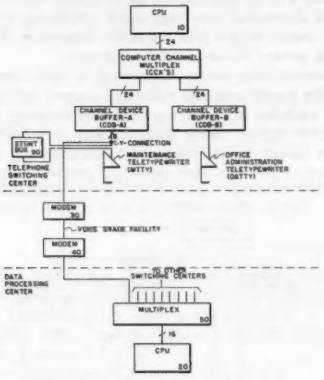
U.S. Cl. 178—4 6 Claims

1. A telephone switching center including a first central processing unit, a first multiplex unit and a printing input/output terminal, and said switching center connected to a data processing center including a second central processing unit and a second multiplex unit, the improvement comprising:

voice transmission means connected between said telephone switching center and said data processing center operated in response to messages generated by said first central processing unit to transmit said messages to said second central processing unit, and alternatively operated in response to messages generated by said second central processing unit to transmit said generated messages to said first central processing unit;

circuit means connected to said input/output terminal operated in response to first and second characters of said transmitted messages to start and stop the printing of said input/output terminal respectively; and

circuit connection means for connecting said first multiplex unit of said first central processing unit to said input/output terminal and for connecting said second multiplex unit



via said voice transmission means to the common connection of said first multiplex unit and said input/output terminal whereby messages are transmitted from said first central processing unit concurrently to said input/output terminal and to said second central processing unit, and alternatively messages are transmitted from said second central processing unit concurrently to said first central processing unit and to said input/output terminal.

4,282,400

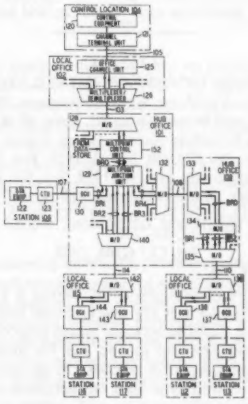
SIGNALING UNIT FOR INTERCHANGE OF DATA WITH MULTIPOINT LINE SELECTION UNITS AND DATA TERMINALS

John F. Ribera, Jackson, N.J.; Walter R. Schaefer, Fremont, Calif., and Robert R. Seibel, Barnegat, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1980, Ser. No. 124,660

Int. Cl.³ H04H *9/00;* **H04L** *25/20;* **H04J** *3/08*

U.S. Cl. 178—73 **8 Claims**



1. A data communication system including a plurality of data switching units (**129, 134, 142**), each unit including means responsive to selection signals on a main line thereof (**BR0**) for selecting one of a plurality of branch lines thereof (**BR1–BR4**) for data interchange, the communication system being arranged to interconnect branch lines (**BR3, BR4**) of a first unit (**129**) to main lines of other units and to connect data sending and receiving terminals (**112, 113, 116, 117**) to branch lines of the other units, the communication system further including control means (**152**) for sending the selection signals to the first unit main line,

characterized in that

the control means includes means (**201, 202, 203**) responsive to address signals received from a remote source (**104**) defining each of the terminals for sending a sequence of the selection signals to select the first unit branch line connected to the main line of the other unit and to thereafter select the other unit branch line connected to the defined terminal.

4,282,401

SYSTEM FOR TRANSMISSION AND RECEPTION OF DISCRETE FOUR CHANNEL STEREO

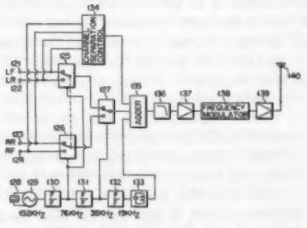
Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Company, Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,866

Claims priority, application Japan, Dec. 24, 1970, 45-117258; Dec. 30, 1970, 45-122306; Apr. 27, 1971, 46-27836; Apr. 27, 1971, 46-27838; Jun. 2, 1971, 46-37888; Jun. 9, 1971, 46-40185; Jul. 15, 1971, 46-52597; Aug. 12, 1971, 46-61252

Int. Cl.³ H04H *5/00*

U.S. Cl. 179—1 GH **26 Claims**



1. A discrete four channel stereophonic broadcasting system comprising a transmitter including

a source of four-channel stereophonically related audio frequency signals representing LF, LR, RF and RR respectively,

means for producing a composite signal representing a modulation function of the form:

$$f_1(t)=A+B\sin 2\omega t+C\cos 2\omega t+D\sin 4\omega t+K\sin \omega t$$

where

$A=LR+LR+RR+RF$,

$B=LF+LR-RR-RF$,

$C=LF-LR-RR+RF$,

$D=LF-LR+RR-RF$,

K is a constant, and

ω is an angular frequency higher than that of said audio signals,

means for providing a main carrier wave,

means for frequency modulating said main carrier wave in accordance with said composite signal, and

means for broadcasting said frequency modulated main carrier wave.

4,282,402

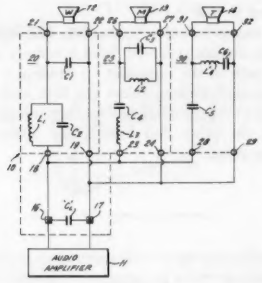
DESIGN OF CROSSOVER NETWORK FOR HIGH FIDELITY SPEAKER SYSTEM

Harry D. Liontonia, 6 N. Perkins Ave., Elmsford, N.Y. 10523

Filed Apr. 23, 1979, Ser. No. 32,163

Int. Cl.³ H04R *3/14*

U.S. Cl. 179—1 D **12 Claims**



1. A high fidelity speaker system in combination with a filter network for coupling an audio amplifier to said speaker system for generating high fidelity signals over a predetermined audio frequency spectrum; said speaker system including a woofer for high fidelity reproduction of signals in a low frequency band of said spectrum at the low end thereof, a tweeter for high fidelity reproduction of signals in a high frequency band of said spectrum at the high end thereof, and a midrange for high fidelity reproduction of signals in a mid-frequency band of signals falling between said high and low frequency bands; said filter network including input terminals for operative connection to the output of an audio amplifier, a first section of said network having an input connected across said terminals and an output having said woofer connected thereacross, a second section of said network having an input connected across said terminals and an output having said mid-range connected thereacross, and a third section of said network having an input connected across said terminals and an output having said tweeter connected thereacross, each of said sections including reactive element means connected in a predetermined circuit configuration, said reactive element means of said first section having a predetermined quantitative relationship with said relative element means of said second section, said reactive element means of said first and said second sections having a predetermined quantitative relationship with said reactive element means of said third section, and a lock capacitor means connected across said input terminals.

4,282,403

PATTERN RECOGNITION WITH A WARPING FUNCTION DECIDED FOR EACH REFERENCE PATTERN BY THE USE OF FEATURE VECTOR COMPONENTS OF A FEW CHANNELS

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,965

Claims priority, application Japan, Aug. 10, 1978, 53-98069

Int. Cl.³ G10L *1/00*

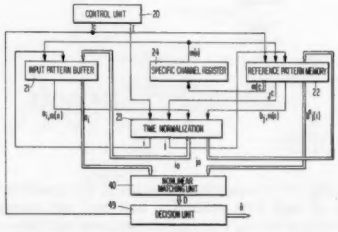
U.S. Cl. 179—1 SD **4 Claims**

1. A pattern recognition device for recognizing an input pattern with reference to a plurality of reference patterns, said device comprising:

input pattern buffer means for memorizing a time sequence of input pattern feature vectors representative of said input pattern and defined by vector components in a space of a prescribed number of dimensions;

reference pattern memory means for memorizing time sequences of reference pattern feature vectors representative of the respective reference patterns and given by vector components in said space, the vector components of any one of said reference pattern feature vector sequences and said input pattern feature vector components of an associated one of said input pattern feature vectors thereby corresponding to one another, said reference pattern memory means being for further memorizing dimension specifying signals in one-to-one correspondence with said reference pattern feature vector sequence, each dimension specifying signal specifying specific vector components within a specific dimension of the reference pattern feature vector sequence;

time-normalizing means connected to said input pattern buffer means and said reference pattern memory means for carrying out time normalization between said input pattern feature vector sequence and each reference pattern feature vector sequence by determining a warping function for said each reference pattern feature vector



sequence which time correlates said input pattern feature vectors and the feature vectors of said each reference pattern feature vector sequence to one another so as to minimize a difference between a pattern represented by the specific vector components specified by the dimension specifying signal corresponding to said each reference pattern feature vector sequence and another pattern represented by the input pattern feature vector components corresponding to said specific vector components; and

comparing means connected to said input pattern buffer means, said reference pattern memory means, and said time-normalizing means for comparing said input pattern feature vector sequence and said reference pattern feature vector sequences with one another with reference to the warping functions determined for the respective reference pattern feature vector sequences to decide which of said reference patterns is most similar to said input pattern.

4,282,404

SYNTHETIC-SPEECH CALCULATORS

Akira Tanimoto, Kashihara; Sigeaki Masuzawa; Shinya Shibata, both of Nara, and Shinzo Nishizaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 874,950, Feb. 3, 1978, Pat. No. 4,185,169. This application Aug. 10, 1979, Ser. No. 65,419

Claims priority, application Japan, Feb. 4, 1977, 52-13529[U]; Feb. 10, 1977, 52-13629; Feb. 25, 1977, 52-20496; Feb. 28, 1977, 52-22084; Feb. 28, 1977, 52-22085

Int. Cl.³ G10L *1/08*

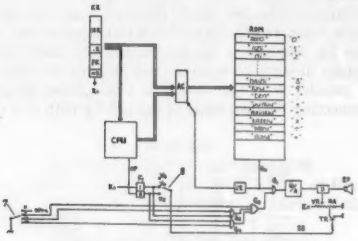
U.S. Cl. 179—1 SM **9 Claims**

1. A synthetic speech calculator having a keyboard, said keyboard including a first key and a second key, comprising:

audible sound signal generating means responsive to actuations of said first and second key for producing a first audible sound signal in response to an actuation of said first key followed by at least one actuation of said second key and for producing a second audible sound signal in response to at least one actuation of said second key; and

audible sound generating means responsive to said first audible sound signal and said second audible sound signal

from said audible sound signal generating means for generating a first audible sound in response to said first audible sound signal and for generating a second audible sound in response to said second audible sound signal.

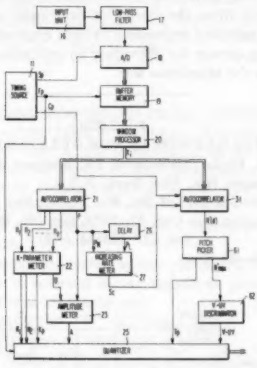


4,282,405

SPEECH ANALYZER COMPRISING CIRCUITS FOR CALCULATING AUTOCORRELATION COEFFICIENTS FORWARDLY AND BACKWARDLY

Tetsu Taguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,283
Claims priority, application Japan, Nov. 24, 1978, 53-145084
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **4 Claims**



1. A speech analyzer for analyzing an input speech sound signal representative of speech sound of an input speech sound waveform into a plurality of signals of a first group representative of a preselected one of spectral distribution information and spectral envelope information of said speech sound waveform and at least two signals of a second group representative of sound source information of said speech sound, said speech sound having a pitch period of a value variable between a shortest and a longest pitch period, said speech analyzer comprising:

window processing means for processing said input speech sound signal into a sequence of a predetermined number of windowed samples, said sequence lasting each of a series of predetermined window periods, said windowed samples being representative of the speech sound in said each window period and equally spaced with respect to time between a leading and a trailing end of said each window period;

first means connected to said window processing means for processing said windowed sample sequences into said first-group signals and a first of said second-group signals, said first signal being representative of amplitude information of the speech sound in the respective window periods;

average power calculating means operatively coupled to said first means for calculating with reference to said first signal an average power of the speech sound at least for said each window period and one of said window periods that next precedes said each window period in said series;

increasing rate calculating means connected to said average power calculating means for calculating for said each window period a rate of increase of the average power calculated for said each window period relative to the average power calculated for said next preceding window period to produce a control signal having a first and a second value when the rate of increase calculated for said each window period is greater and less than a preselected value, respectively;

second means connected to said window processing means and said increasing rate calculating means for calculating a plurality of autocorrelation coefficients for a plurality of joining intervals, respectively, by the use of reference members and joint members, said joining intervals differing from one another by the equal spacing between two successive ones of said windowed samples and including a shortest and a longest joining interval which are decided in accordance with said shortest and said longest pitch periods, respectively, said reference members being those prescribed ones of said windowed samples which are successively distributed throughout a reference fraction of said each window period, said reference fraction being placed farther with respect to time from the leading and the trailing ends of said each window period when said control signal has said first and said second values, respectively, said joint members being those sets of windowed samples, the windowed samples of each set being equal in number to said prescribed samples, which are successively distributed throughout a plurality of joint fractions of said each window period, respectively, said joint fractions being displaced in said each window period from said reference fraction by said joining intervals, respectively, farther from the trailing and the leading ends of said each window period when said control signal has said first and said second values, respectively; and

third means connected to said second means for producing a second of said second-group signals by finding a greatest value of the autocorrelation coefficients calculated for the respective joining intervals for said each window period and making said second signal represent those joining intervals as the pitch periods of the speech sound in the respective window periods for which the autocorrelation coefficients having the greatest values are calculated for the respective window periods.

4,282,406

ADAPTIVE PITCH DETECTION SYSTEM FOR VOICE SIGNAL

Fumihiro Yato, Komae; Seishi Kitayama, Tokyo; Junso Tamura, Tokyo; Hikoichi Ishigami, Tokyo, and Akira Kurematsu, Yokohama, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 19, 1980, Ser. No. 122,256
Claims priority, application Japan, Feb. 28, 1979, 54-22954
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SC **4 Claims**

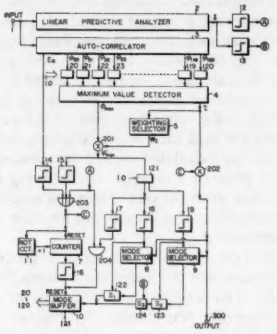
1. An adaptive pitch detection system for detecting the pitch of a voice signal, comprising:

input terminal means for receiving the voice signal;

detection means connected to the input terminal means for detecting the pitch from one of a plurality of predetermined pitch searching periods, which are determined so that pitch components of multiple relationships are not included in each of the pitch searching periods; and

control means connected to said detection means for adap-

tively shifting said one of the predetermined pitch searching periods so as to follow the change direction of the pitch predicted from the result of detection of the detected pitch.

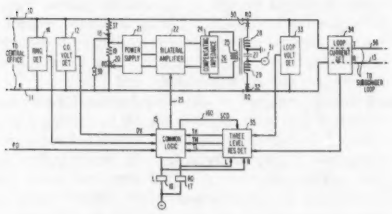


4,282,407

TELEPHONE LOOP RESISTANCE DETECTOR

Kenneth E. Stiefel, Randolph Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1979, Ser. No. 85,025
Int. Cl.[3] H04G *1/30*; H04M *3/00*
U.S. Cl. 179—18 FA **10 Claims**



1. A subscriber loop resistance detector including a loop voltage sensor and a loop current sensor, said resistance detector

characterized by

a differential amplifier having two inputs and a single output,

means coupling said loop voltage sensor to one of said inputs,

means coupling said loop current sensor to the other of said inputs, and

means responsive to said output for modifying at least one of said coupling means.

4,282,408

ON-HOOK/OFF-HOOK DETECTOR CIRCUIT

Olgerts Stauers, Lakewood, Colo., assignor to Western Electric Company, Inc., New York, N.Y.

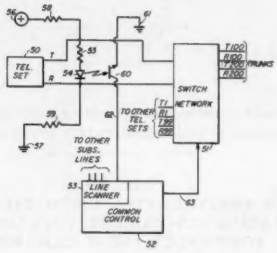
Filed Oct. 25, 1979, Ser. No. 88,219
Int. Cl.[3] H04M *3/22*; H04B *3/00*
U.S. Cl. 179—18 FA **4 Claims**

3. A circuit for detecting current flow in a subscriber's telephone set between two leads of a talking path connected to the set, comprising:

a light-emitting device;

a current-limiting resistor connected in series with the light-emitting device, the resistor having a relatively high resistance compared to the off-hook resistance of the set;

means for connecting the device and the current-limiting resistor directly between the two leads of the talking path in parallel with the subscriber's telephone set and for connecting the two leads of the talking path to a current source so that (1), when the subscriber's telephone set is off-hook, the device circuit is effectively shorted by current flowing through the set and insufficient current flows from the current source to the device to drive the device to emit light, and (2), when the subscriber's telephone set is on-hook, sufficient current flows from the source to the device to drive the device to emit light; and



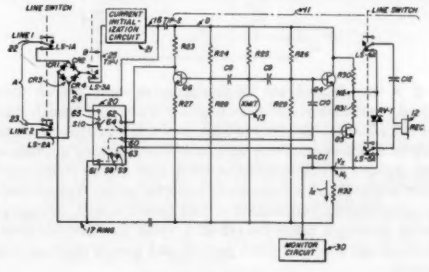
a photo-transistor responsive to light emitted from the light-emitting device for providing an indication of the current flow in the telephone set.

4,282,409

SPEECH NETWORKS FOR TELEPHONE SETS

Raymond G. Taylor, Shreveport, La., assignor to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 72,252, Sep. 4, 1979. This application Oct. 17, 1979, Ser. No. 86,024
Int. Cl.[3] H04M *1/00*
U.S. Cl. 179—81 R **10 Claims**



1. A speech network for a telephone set having a receiver circuit and a transmitter circuit connected in parallel between tip and ring leads connected to a telephone line, which comprises:

(a) transistor means for amplifying speech signals;

(b) first circuit connecting means for normally connecting the transistor means between tip and ring in a first configuration or receive mode, for amplifying a received signal from the line and for applying the amplified receive signal to the receiver circuit;

(c) second circuit connecting means for connecting the

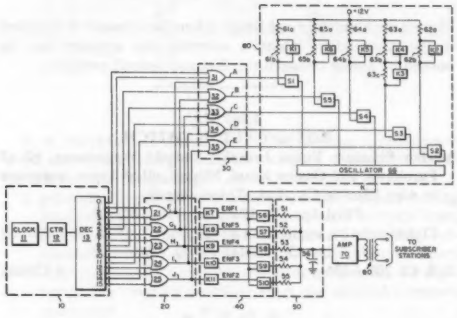
transistor means between tip and ring in a second and different configuration or transmit mode, for amplification of the transmitter output by the transistor means and transmission of an amplified transmit signal to the line; and

(d) switching means, actuated by a voice-signal output from the transmitter, for switching the circuit connecting means from the receive mode to the transmit mode in response to a transmitter output above a predetermined threshold level.

4,282,410
RINGING SIGNAL GENERATOR

John A. Gauthier, and David M. Shaver, both of Brockville, Canada, assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Apr. 9, 1979, Ser. No. 28,622
Int. Cl.³ H04M *5/00*
U.S. Cl. 179—84 R **11 Claims**



1. A ringing signal generator for use in a telephone communication system connectable to a plurality of telephone substations including at least a first substation responsive to a first ringing signal frequency and a second substation responsive to a second substation ringing signal frequency, said ringing signal generator comprising:

pulsing means operated to generate a plurality of periodic timing signals;

first gating means connected to said pulsing means operated in response to selected timing signals to generate a first plurality of enable signals; and

oscillation means;

a plurality of frequency determining means;

a plurality of first switching means connected between said oscillation means and said plurality of frequency determining means and also connected to said first gating means; said first plurality of switching means operated in response to each of said first plurality of enable signals to connect a predetermined one of said plurality of frequency determining means to said oscillation means; and

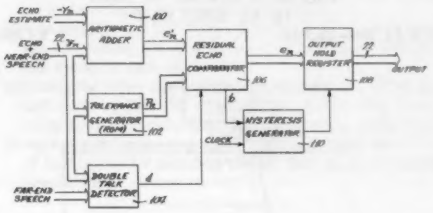
said oscillation means operated to generate a signal of a predetermined frequency in response to being connected to said one of said plurality of frequency determining means.

4,282,411
RESIDUAL ECHO SUPPRESSOR FOR ECHO CANCELLER

Robert C. Stewart, Hinsdale, Ill., assignor to Tellabs, Inc., Lisle, Ill.

Filed Jun. 4, 1979, Ser. No. 45,176
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **33 Claims**

1. A residual echo suppressor for use with an echo canceller in telephone systems having separate transmit and receive channels, wherein the echo canceller is of the type having means in the transmit channel for subtracting or cancelling an echo estimate from a true echo in an uncancelled signal on the channel to leave a residual signal on the channel, said residual echo suppressor comprising means in the transmit channel for

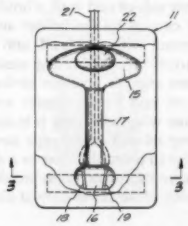


comparing the values of the uncancelled and the residual signals and for suppressing the residual signal when the ratio of the value of the same to the value of the uncancelled signal has less than a selected value.

4,282,412
MERCURY SWITCH FOR MONITORING POSITION OF PATIENT

Robert E. Florin, 7921 S. Painter Ave., Whittier, Calif. 90602

Continuation-in-part of Ser. No. 935,363, Aug. 21, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,002
Int. Cl.³ H01H *29/20*
U.S. Cl. 200—52 R **7 Claims**



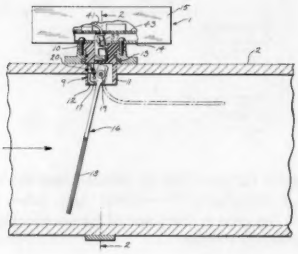
1. A mercury switch assembly adapted to be secured to a patient for monitoring changes in position, comprising in combination: a body formed of electrically non-conducting material having walls defining a head chamber and a foot chamber longitudinally spaced, the body having a narrow throat passageway connecting said chambers, said chambers being deeper and wider than said throat passageway, spaced electrodes projecting into said foot chamber, a quantity of mercury capable of contacting said electrodes to form an electrical connection between them, said quantity of mercury having a volume less than the volume of the head chamber and being normally contained within said head chamber when the switch assembly is in normal horizontal position, said walls being so shaped that said quantity of mercury moves by gravity from said head chamber through said narrow throat passageway and into said foot chamber only when the switch assembly is tilted to incline said throat passageway to a predetermined degree, said head chamber having lateral extensions of substantial depth for continuously retaining said quantity of mercury in said head chamber during lateral turning movement of the switch assembly when the inclination of said throat passageway is less than said predetermined degree.

4,282,413

LIQUID FLOW INDICATOR

John R. Simons, Greendale, and John W. Fenske, Wauwatosa, both of Wis., assignors to Grunau Company, Inc., Milwaukee, Wis.

Filed Jul. 2, 1979, Ser. No. 54,299
Int. Cl.³ H01H *35/40*
U.S. Cl. 200—81.9 M **8 Claims**



1. A water flow indicator for use in an automatic sprinkler system, comprising clamping means to be clamped to the outer surface of a water pipe having an aperture, said clamping means having an opening disposed in alignment with said aperture in said pipe, a vane retainer having a head disposed against the outer surface of the clamping member and having a generally cylindrical stem portion disposed within the aligned opening and aperture, said retainer having an inner axial recess and an outer axial well and a wall separating said recess and said well, a one-piece flexible plastic vane having a head disposed within the recess and pivotally connected to said stem portion and having a generally circular body portion disposed within said pipe, a magnet carried by the head of said vane and disposed on the inner side of said wall, a holder disposed within said well, a sensor carried by the holder and disposed within the well and in contact with said wall, said sensor being connected in an electrical circuit, biasing means for urging the vane to an upstream angular position under non-flow conditions, and a stop on said vane retainer and disposed to be engaged by said vane when said vane is in said upstream angular position, opening of said water pipe downstream causing flow within said pipe to pivot the vane in a downstream direction and thereby move the magnet into proximate relation with said sensor to thereby close the electrical circuit and generate a signal.

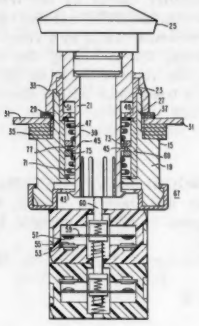
4,282,414

CONVERTIBLE SWITCH OPERATOR

Robert J. Johnston, Patterson Hts.; Stephen G. Layciak, and George M. Cametti, both of Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 30, 1979, Ser. No. 70,958
Int. Cl.³ H01N *13/56*; H01H *15/00*
U.S. Cl. 200—160 **4 Claims**

1. A convertible switch operator for use by conversion as a pull momentary and a push-pull momentary operation, comprising separable switch contacts, a contact operating member for moving the contacts between open and closed positions, a housing, an actuator within the housing and movable longitudinally between first and second positions for reciprocally moving the member, first stop means within the housing for limiting movement of the actuator beyond the first position, first spring means for holding the actuator in the first position against said stop means, whereby the actuator may be pulled manually to the second position against the bias of the spring, means for converting the operator to a push-pull operation and comprising second spring means for holding the actuator in an intermediate position in combination with the first spring means, the means for converting the operator also comprises a guide between the housing and the actuator, the guide having an inturned flange, the actuator having an outturned flange



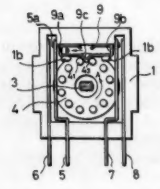
aligned with the inturned flange when the actuator is disposed in the intermediate position, whereby the actuator may be pushed or pulled between the first and second positions.

4,282,415

ROTARY PULSE SWITCH

Michio Shimizu; Yukio Iwasaki; Tadashi Wagatsuma, all of Furukawa, and Osamu Kasai, Miyagi, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1980, Ser. No. 144,335
Claims priority, application Japan, May 2, 1979, 54-59383[U]
Int. Cl.³ H01H *19/60, 19/54*
U.S. Cl. 200—336 **4 Claims**



1. A rotary pulse switch comprising:

a rotor provided with a plurality of protrusions spaced at equal intervals on a peripheral edge of at least one surface thereof and having an operation rod fixed to a central part thereof;

first and second contact member each consisting of a single fixed contact element and a single movable contact element;

a slidable member made from a spring material and which comes into contact with said movable contact elements in said first and second contact members, said slidable member being formed with a bulge to engage said protrusions of said rotor;

a first housing formed with a recess for receiving said rotor in a rotatable manner, said housing having a hole for rotatably holding said operation rod, holding portions for holding said first and second contact members at a right end and a left end of said housing respectively, and a holding portion for slidably holding said slidable member near free ends of said first and second contact members and in an intermediate position between both these members; and

a second housing which abuts on said first housing to close up said recess of said first housing;

whereby when said rotor is rotated clockwise or counterclockwise, a protrusion of said rotor engages the bulge of

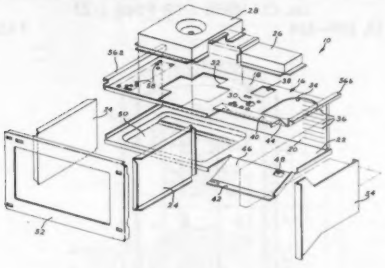
said slidable member and moves said slidable member rightwards or leftwards so as to cause said slidable piece to turn "on" said first or second contact member.

4,282,416

UNITIZED STRUCTURE FOR A MICROWAVE OVEN

James A. White, Louisville, Ky., assignor to General Electric Co., Louisville, Ky.

Filed Aug. 21, 1978, Ser. No. 935,445
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 R **6 Claims**



1. A simplified structure for use in forming a microwave oven having a cooking chamber, a control compartment and an access door comprising

a generally U shaped in cross section main frame having integral top, rear and bottom surfaces and an open front,

a partition wall carried by said surfaces and extending substantially at right angles thereto for subdividing the space intermediate said top, rear, and bottom surfaces, for separating the cooking chamber from the control compartment, and

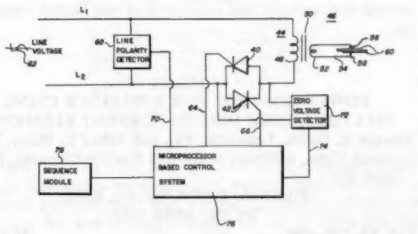
a door frame adapted for connecting the oven door thereto, said door frame attached to said top and bottom surfaces in front of said cooking chamber, said frame defining an opening therein for access to said chamber.

4,282,417

METHOD FOR CONTROLLING MAGNETIZING CURRENT IN MULTIPULSE RESISTANT WELDING

Dennis J. Jurek, Grafton, Wis., assignor to Square D Company, Palatine, Ill.

Filed Oct. 30, 1978, Ser. No. 956,138
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—116 **5 Claims**



5. In a resistance welding system having a welding transformer with a primary and secondary winding operating in a multipulse sequence, each pulse consisting of a predetermined and equal number of positive and negative half cycles of current having a first and last half cycle, a microprocessor as its main control element, a method of eliminating the magnetizing current transients in the primary winding by reducing the residual currents, known to be proportional to the volt-second integral of an applied voltage on said transformer, in the secondary winding to zero at the end of each pulse comprising the steps of:

selecting a suitable delay angle to fire the first half cycle of current conduction in each pulse;

utilizing the known cycling time of the microprocessor to execute a particular instruction to generate a time delay corresponding to the suitable delay angle;

determining the last half cycle of current conduction in each pulse by having the microprocessor counting the initiated half cycles in each pulse;

adjusting the delay angle of the current initiation of the last half cycle so that the algebraic sum of the volt-second integrals of each pulse is approximately equal to zero; and

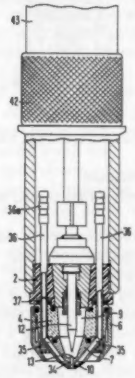
firing a control means responsive to the time delay and count of half cycles for initiating the last half cycle of current conduction.

4,282,418

PLASMA TORCH FOR MICRO-PLASMA WELDING

Friedrich Wuestner, Wolfratshausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 53,686
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1978, 2839485
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 PP **7 Claims**



1. In a plasma welding torch particularly adapted for micro-plasma welding, said torch having a hollow cylindrical torch housing; a pin-shaped electrode terminating in a point; means for mounting the electrode in the torch housing and insulating it therefrom; a plasma gas nozzle being disposed adjacent the point of the electrode and having a cooling chamber formed therein and a plasma channel for the plasma to pass therethrough; an inert gas nozzle being arranged concentrically around the plasma nozzle on said housing; and separate means for supplying plasma gas to the plasma nozzle, inert gas to the inert gas nozzle, welding current to the electrodes, and a cooling agent to the cooling chamber the improvements comprising said pin-shaped electrode having an enlarged diameter cylindrical surface tapering to said point; the plasma channel of the plasma nozzle having a raised annular edge at an end facing toward the point of the electrode so that the closest proximity between the electrode and the nozzle is between the annular edge and the point; cooling means for cooling the electrode including means contacting a portion of the cylindrical surface of the electrode; and said means for mounting the electrode including a passage in a member for receiving the electrode, said passage having a conical portion expanding into a threaded portion, and means for sealing said electrode in said passage, said means for sealing including a conical metal ring

having small tolerances disposed in the conical passage, a threaded bushing threaded into said threaded portion to force the conical metal ring into sealing engagement with the conical portion and the cylindrical surface.

4,282,419

CONSUMABLE ELECTRODE WELDING TORCH WITH POLYGONAL CONTOURED ELECTRODE GUIDE

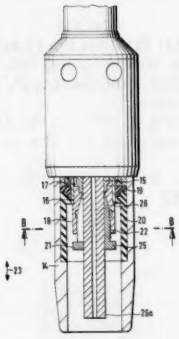
Rupert Auer, Eching, Fed. Rep. of Germany, assignor to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,516

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807686

Int. Cl.³ B23K *9/28, 9/16*

U.S. Cl. 219—137.44 **2 Claims**



1. A welding torch for arc welding, including a consumable electrode,

comprising in combination:

a housing formed with a first thread on an interior portion thereof,

a threadless contact tube disposed in said housing and having an external polygonal contour, and

securing means, including

a first member formed with a second thread on an exterior portion thereof, said first thread mating with said second thread, said first member having a large surface in frictional engagement with said contact tube, and being steplessly adjustable therewith, and releasable therefrom, and having an internal contour matching tne external polygonal contour of said contact tube,

a portion of said first member, being able to be wedged into a portion of said housing, whereby quick operative heat dissipation from the contact tube is promoted.

4,282,420

WELDING ELECTRODE

Kenneth E. Banks, Littlestown, Pa., assignor to Chemetron Corporation, Chicago, Ill.

Filed Feb. 11, 1980, Ser. No. 120,449

Int. Cl.³ B23K *35/30*

U.S. Cl. 219—146.24 **10 Claims**

1. A welding electrode having a generally tubular ferrous metal sheath, and a core defined within the sheath for use in gas shield welding wherein the shielding gas is selected from the group consisting of carbon dioxide, inert gas, oxygen and inert gas mixtures, and mixtures thereof, said core comprising, by total weight of the electrode,

from about 5.0 to 9.0% titanium dioxide,

from about 0.2 to 1.0% magnesium oxide,

up to about 2.0% calcium fluoride,

from about 0.1 to 1.0% sodium oxide,

from about 0.2 to 2.0% silicon,

from about 0.5 to 3.5% manganese,

from about 0.003 to 0.08% boron, and

the balance consisting of an alloy powder selected from the group consisting of nickel, chrome, molybdenum, iron and mixtures thereof.

4,282,421

DUAL COMPARTMENT ELECTRIC WATER HEATER

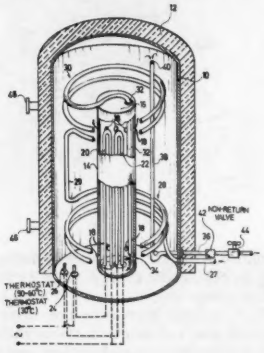
Arieh Hadar, 2 Hamaavak St., Givatayim, Israel

Filed Mar. 5, 1979, Ser. No. 16,958

Claims priority, application Israel, Apr. 2, 1978, 54416

Int. Cl.³ H05B *1/02;* **F24H** *1/22*

U.S. Cl. 219—314 **7 Claims**



1. An electric water heater, particularly for domestic use, having a cold water inlet and a heated water outlet, comprising: first and second water heating compartments in thermal communication with each other and connected such as to permit a thermal circulation of water between them; at least first and second electric heating elements provided within the first compartment, each individually controlled by a separate thermostatic device responsive to the temperature in the second compartment; first and second heat exchanging circulation conduits in fluid flow communication with each other, provided at a lower and an upper portion of the second compartment, respectively, said cold water inlet being connected to said first circulation conduit; an intermediate water outlet in communication with said second conduit provided within said first compartment for supplying water flowing through said second circulation conduit to said first compartment; and an intermediate water inlet located at an upper portion of said second compartment and connected to said heated water outlet.

4,282,422

POWER CONTROL FOR APPLIANCE USING MULTIPLE HIGH INRUSH CURRENT ELEMENTS

Thomas R. Payne, Louisville, Ky., and Alfred L. Baker, Longmount, Colo., assignors to General Electric Company, Louisville, Ky.

Filed Feb. 1, 1979, Ser. No. 8,452

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—486 **25 Claims**

1. A power control arrangement adapted for connection to a pulsating power supply for controlling the power output of a plurality of heater elements comprising:

an operator control including an OFF setting and means for selecting desired power levels for each element,

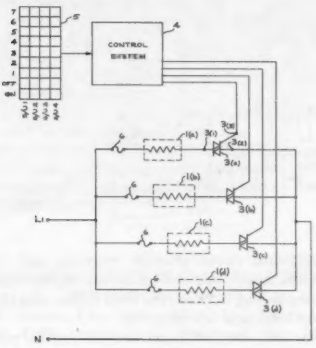
means for generating a pulse train, the time between pulses defining a control interval,

logic means responsive to said operator control for generating a binary control word representing a selected power

level for each heating element, each word including a plurality of bits, and

means for controlling power to each of said elements during any given interval as a function of the state of a selected one of said bits in the control word associated with said element,

detecting means associated with each element for detecting a transition from said OFF setting to a desired power level for its associated element,



means associated with each element responsive to said detecting means for defining a transition period of predetermined duration for its associated element, initiated by said detection of said transition, and

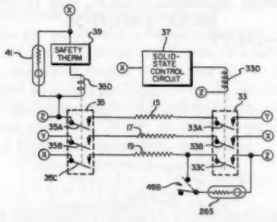
means for inhibiting power to all other elements during those control intervals in which power is applied to a heating element operating in its transient period.

4,282,423

DEEP FAT FRYER HAVING A SOLID-STATE CONTROL CIRCUIT

Kenneth C. Volz, Crystal Lake, Ill., assignor to International Foodservice Equipment Systems, Inc., Elgin, Ill.

Filed May 18, 1979, Ser. No. 40,096
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—490 **12 Claims**



1. In a deep fat fryer having means for establishing a DC voltage differential between a DC power supply line and a reference power supply line and having means including at least two AC power supply lines and one or more heating elements coupled thereto for heating a reservoir of cooking fat, a solid-state control circuit comprising:

means coupled to said DC power supply line and said reference power supply line for developing a reference bias potential;

means including operating temperature control means for selecting the temperature at which said cooking fat is to be maintained and means for sensing the temperature of said cooking fat, said temperature control means and said temperature sensing means being coupled in series between said DC power supply line and said reference power supply line and combining to develop an operating bias potential at the junction between said operating temperature control means and said temperature sensing means, the operating bias potential varying responsive to changes in the temperature of said cooking fat to correspond to the temperature of said cooking fat;

means including a voltage comparator coupled to said reference bias means and said operating bias means for comparing the operating bias potential and the reference bias potential and developing an enabling signal whenever the level of the operating bias potential relative to the level of the reference bias potential indicates that the temperature of said cooking fat is below the temperature selected by said operating temperature control means;

said comparator having positive and negative inputs and an output, the positive input of said comparator being coupled to said reference bias means and having the reference bias potential coupled thereto and the negative input of said comparator being coupled to the junction between said operating temperature control means and said temperature sensing means and having the operating bias potential coupled thereto, said comparator developing a low logic level enabling signal at said output whenever the operating bias potential exceeds the reference bias potential;

said temperature sensing means comprises a negative temperature coefficient (NTC) resistive sensor coupled between said operating temperature control means and said reference power supply line, the resistance of said sensor varying inversely with respect to changes in the temperature of said cooking fat to increase the operating bias potential coupled to said comparator such that the operating bias potential exceeds the reference bias potential and said comparator develops a low logic level enabling signal when the temperature of said cooking fat is below the selected temperature level; and

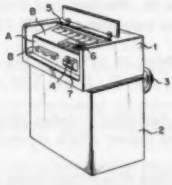
means coupled to said reference bias means and said operating temperature control means for switching said deep fat fryer to operation in a hold mode wherein said cooking fat is maintained at a reduced temperature independently of the temperature selected by said operating temperature control means, said hold mode means altering the reference bias potential and the operating bias potential coupled to said comparator to correspond to the reduced temperature and said comparator developing the enabling signal during operation in the hold mode whenever the level of the altered operating bias potential relative to the level of the altered reference bias potential corresponds to a cooking fat temperature that is below the reduced temperature level.

4,282,424

AUTOMATIC CASH DISPENSING MACHINE

Minoru Hirose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 5, 1980, Ser. No. 118,852
Claims priority, application Japan, Mar. 28, 1979, 54-36733
Int. Cl.³ G06F *15/30, 7/08*
U.S. Cl. 235—379 **6 Claims**



1. An automatic cash dispensing machine delivering a speci-

fied amount of bank notes to a customer in accordance with the customer's operations, comprising:

(a) a casing having a substantially vertical front surface and a substantially horizontal top surface extending backward from the top edge of said front surface;

(b) an operation unit on said horizontal top surface of said casing for designating the amount to be paid, and a guide display unit for displaying instructions for the operations on said operation unit;

(c) inlet means in said vertical front surface of said casing into which an identification medium is to be inserted;

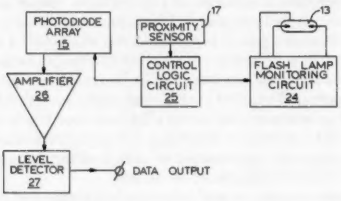
(d) cash outlet means in said vertical front surface of said casing through which cash is discharged; and

(e) a payment mechanism for delivering through said outlet means an amount of bank notes designated by means of said operation unit out of a stack of bank notes previously stored in said dispensing machine.

4,282,425
INSTANT PORTABLE BAR CODE READER

George E. Chadima, Jr., Cedar Rapids, Iowa, and Vadim Laser, Cincinnati, Ohio, assignors to Norand Corporation, Cedar Rapids, Iowa

Filed Jul. 25, 1979, Ser. No. 60,413
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—462 **12 Claims**



1. A portable instant bar code reader comprising:

a hand-held bar bode reader unit, said hand-held bar code reader unit having a portion thereof defining at least in part an illumination window, a flashable illuminator disposed near said illumination window and means for producing a flash of light therethrough;

said hand-held bar code reader unit having a portion thereof defining at least, in part, a light receiving window for receiving reflections of light emitted through said illumination window;

a photodiode array positioned within said hand-held bar code reader in the path of light rays reflected into and through said light receiving window;

a light gathering means positioned between said light receiving window and said photodiode array for receiving a light pattern from said light receiving window and focusing the same onto said photodiode array;

electronic means for reading out the photodiode array; and

means for producing logic signals which are indicative of the light pattern focused onto said photodiode array.

4,282,426
SLOT SCANNING SYSTEM

Syed Neseem; Denis M. Blanford, and Gene L. Amacher, all of Cambridge, Ohio, assignors to NCR Corporation, Dayton, Ohio

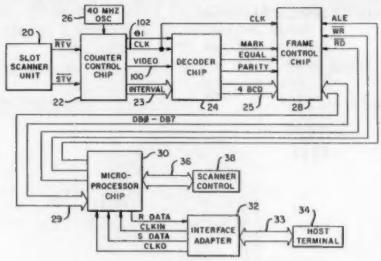
Filed May 30, 1979, Ser. No. 43,928
Int. Cl.³ G04K *7/10*
U.S. Cl. 235—463 **17 Claims**

1. A system for decoding a coded symbol consisting of a plurality of bars and spaces which represent characters comprising;

means for generating data representing the bars and spaces of the symbols;

a first large scale integrated circuit chip having circuits for applying predetermined relationships to said data and for generating continuous valid and invalid characters in response to the generation of the data representing each consecutive bar and space whenever said relationships are satisfied;

a second large scale integrated circuit chip coupled to said



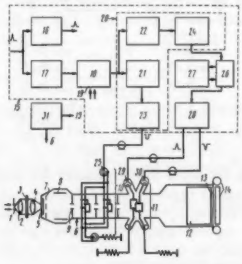
first integrated circuit chip for receiving said valid and invalid characters, said second circuit chip having circuits for distinguishing between the valid and invalid characters received from said first chip; and

a processor chip coupled to said second chip for processing said valid characters upon the distinguishing of said valid characters by said second chip.

4,282,427
ELECTROOPTICAL CAMERA FOR REGISTERING HIGH-SPEED PROCESSES

Gennady I. Brjukhnevich, prospekt Vernadskogo, 66, kv. 16; Anatoly F. Klepov, Nagatinskaya ulitsa, 29, korpus 3, kv. 26; Lidia I. Kondrashova, Profsojuznaya ulitsa, 115, kv. 39; Valery I. Lozovoi, Orekhovy bulvar, 37, korpus 2, kv. 312; Viktor A. Miller, Aviatsionnaya ulitsa, 74, korpus 4, kv. 80; Valdis E. Postovalov, ulitsa Krasnodarskaya, 57 korpus 1, kv. 61; Alexandr M. Prokhorov, Zvenigorodskaya ulitsa, 4, kv. 10; Jury N. Serdjuchenko, Yasenevo, 2 Mikroraion, korpus 3, kv. 449; Boris M. Stepanov, Leninsky prospekt, 57, kv. 34, and Mikhail Y. Schelev, ulitsa Chkalova, 12/7, kv. 17, all of Moscow, U.S.S.R.

Filed Apr. 2, 1979, Ser. No. 26,244
Claims priority, application U.S.S.R., May 16, 1978, 2615351
Int. Cl.³ H01J *31/50*
U.S. Cl. 250—213 VT **8 Claims**



1. An electrooptical camera for registering high-speed processes represented by beams of radiation, comprising:

an image intensifier having an evacuated tube envelope, a gate system and a deflection system within said evacuated tube envelope to control the beam of radiation within said image intensifier;

control means connected to said gate and deflection systems for controlling said systems, said control means including

a trigger oscillator having input means for accepting an electric trigger pulse,

a master oscillator connected to said trigger oscillator and having an optical input to provide for direct triggering of said master oscillator by the beam of radiation being registered,

first amplification means including first inverter means and connected between said master oscillator and said gate system for driving said gate system responsive to output signals from said master oscillator,

second amplification means including second inverter means and having an input connected to said master oscillator;

a transformer/shaper which serves as a load to said second amplifying means and is connected to said deflection system for providing positive and negative scan pulses to said deflection system;

integrators insertable between said second amplifying means and said transformer/shaper; and

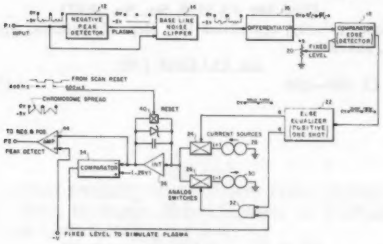
a scanning time selector for selectively inserting said integrators between said second amplifying means and said transformer/shaper to provide desired scanning times for said deflection system.

4,282,428

CHROMOSOME DETECTOR USING A SCANNING MICROSCOPE SYSTEM

Gerald D. Hunter, Lino Lakes, Minn., and Gaston A. Palombo, Agoura, Calif., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 17, 1979, Ser. No. 85,745
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—214 R **5 Claims**



1. A chromosome detector comprising:

input means for producing a signal representative of a scan of a predetermined incremental area of a prepared slide,

amplitude analyzing means for analyzing the amplitude of said signal with respect to a threshold level and

frequency analyzing means for analyzing the output of said amplitude analyzing means to produce an output signal having a frequency dependent amplitude.

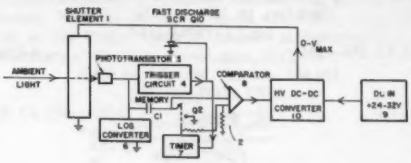
4,282,429

FLASH PROTECTION CONTROLLER

Lee K. Galbraith, Mountain View, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 7, 1979, Ser. No. 101,368
Int. Cl.³ G02F *1/01*; H01J *40/14*
U.S. Cl. 250—214 RC **7 Claims**

1. A controller for use with a flash protection device having an electro-optic shutter wherein the amount of light transmitted by the shutter is controlled by the magnitude of DC voltage, said controller comprising: a detecting means for generating an electrical signal proportional to the intensity of ambient light; trigger means, connected to said detecting means, for providing a trigger signal based on the rate of rise of intensity of ambient light; a low voltage power supply; control means, connected to said power supply, for providing a control voltage for the shutter; switch means for connecting the control voltage to a point of reference potential in response to the trigger signal; memory means responsive to the trigger signal



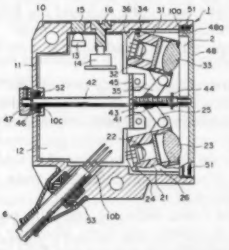
for storing a voltage indicative of pre-flash ambient light; and amplifier means for connecting the output of said memory means to said control means in response to said trigger signal.

4,282,430

REFLECTION-TYPE PHOTOELECTRIC SWITCHING APPARATUS

Hideaki Hatten, Muko; Norio Onji, Kyoto; Koichi Tsujino, Kyoto, and Toshifumi Fukuyama, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jun. 11, 1979, Ser. No. 47,082
Claims priority, application Japan, Jun. 19, 1978, 53-74032
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—221 **11 Claims**



1. In a reflection-type photoelectric switching apparatus having a light projecting device for projecting a beam of light to an object, a light receiving photoelectric device arranged in side-by-side relation with said light projecting device for receiving a reflected light ray from said object, a circuit device operative in response to output signals from said light receiving device for generating a switching output signal, and a housing for enclosing said light projecting and receiving devices and circuit device,

the improvement comprising an optical axis adjusting means which is controllable from outside of said housing for adjusting the optical axis of at least one of said light projecting and receiving devices,

said circuit device being coupled to the receiving device and having a predetermined detection level,

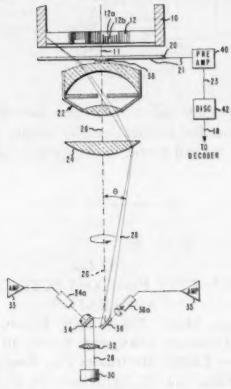
said light projecting and receiving devices respectively having optical members which allow both the light beam from said projecting device and the light beam incident on said receiving device to pass within a predetermined light path having a predetermined effective zone so that said two light beams will be crossed in a desired detection field, and

the distance from said photoelectric switching apparatus to said desired detection field being continuously variable by said optical axis adjusting means.

4,282,431
BAR CODE SCANNER

John D. Anthony, Jr.; John J. Keegan, Jr., both of Wilmington, Del., and Jerald D. Lee, Mendenhall, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1979, Ser. No. 86,044
Int. Cl.[3] H01J *3/14*
U.S. Cl. 250—236 4 Claims



1. An apparatus for scanning light reflective bar-coded lables located on the internal surface of a tube and for providing coded signals, said apparatus comprising:

a wide angle lens having an optic axis, said lens being proximate said tube, said optic axis and the longitudinal axis of said tube being substantially coincident;

a field lens spaced from and coaxial with said wide angle lens;

means for generating a slightly convergent beam of light at a location spaced from said tube and said optic axis and for directing the beam into a path substantially parallel to said optic axis;

a first light beam deflector positioned in said path to receive the beam of light and deflect it away from said path toward said optic axis;

a second light beam deflector centrally positioned on said optic axis to receive the light from the first light beam deflector and reflect it toward said field lens so that all the light is received by said field lens;

means for substantially sinusoidally oscillating said first and second deflectors in a phase controlled relationship for mutually deflecting said beam along a second path which diverges from and rotates about said optic axis as it approaches said field lens; and

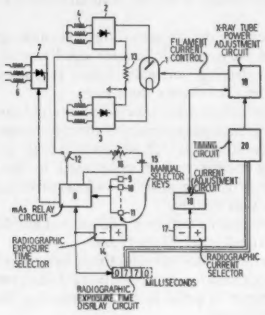
a light detector positioned between said wide angle lens and said tube on the optic axis to receive light reflected from the bar-coded labels located on the internal surface of the tube and to provide coded signals.

4,282,432
X-RAY DIAGNOSTIC GENERATOR WITH AN MAS RELAY

Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,700
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846531
Int. Cl.[3] A61B *6/00*; H05G *1/46*
U.S. Cl. 250—322 4 Claims

1. An x-ray diagnostic generator comprising a mAs relay having organ keys for the organ-programmed selection of mAs products, characterized in that, for the purpose of individual adjustment of the exposure time, said mAs relay has an auxiliary current source (**15**), and an exposure time selector means (**14**), the input of the mAs relay (**8**) being capable of connection to said auxiliary current source (**15**) to receive a constant

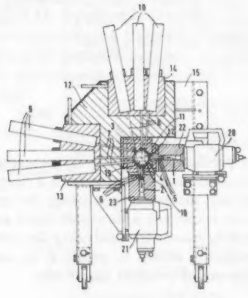


auxiliary current independent of radiological current, such that the operating threshold of the mAs relay (**8**) is adjustable by the exposure time selector means (**14**) to provide any exposure time selected thereby.

4,282,433
APPARATUS FOR MEASURING THE DENSITY OF A MULTIPHASE STREAM

Rudi Löffel, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,671
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817018
Int. Cl.[3] G01F *1/00*
U.S. Cl. 250—356 6 Claims



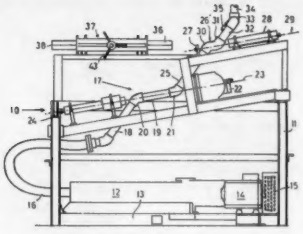
1. In a system for measuring the denisty of a two-phase, gas-liquid fluid stream by utilization of the gamma ray absorption method, including means defining a flow channel through which the stream is conducted, gamma radiation source means for directing gamma radiation through the channel, and gamma radiation detector means disposed for receiving gamma radiation after it passes through the channel, the improvement wherein said source means comprises at least two radiation sources disposed in a common plane perpendicular to the axis of said flow channel and angularly spaced about that axis and means defining at least one beam channel associated with each said source for forming the radiation from its said source into a collimated beam directed into said flow channel, said beam channels being oriented for causing collimated beams from each said source to intersect one another within said flow channel.

4,282,434

RADIATION MEASUREMENTS ON MINERAL SLURRIES

Geoffrey J. Lyman, Taringa, Australia, assignor to The University of Queensland, St. Lucia, Australia

Filed Nov. 28, 1978, Ser. No. 964,307
Claims priority, application Australia, Nov. 28, 1977, PD2575
Int. Cl.[3] G01V *23/00;* G01N *5/00;* B01D *19/00*
U.S. Cl. 250—359 14 Claims



1. A method of radiation measurements on continuously moving slurries including the steps of:

(a) raising the pressure of the moving slurry to reduce the volume of gas present as bubbles therein below a predetermined value;

(b) continuously moving the slurry under pressure through a measurement zone; and

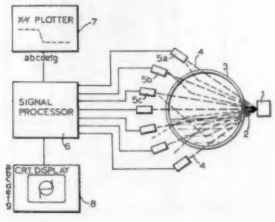
(c) measuring the radiation characteristics of the slurry.

4,282,435

MONO-ENERGETIC NEUTRON VOID METER

Frank Stern, Burlington, Canada, assignor to Westinghouse Canada Limited, Hamilton, Canada

Filed Apr. 16, 1979, Ser. No. 30,478
Claims priority, application Canada, Aug. 22, 1978, 309772
Int. Cl.[3] G01T *3/00*
U.S. Cl. 250—390 2 Claims



1. A method of measuring the steam/water ratio in a thermal generating system comprising:

subjecting a cross section of the steam/water mixture to radiation consisting of mono-energetic epithermal neutrons;

counting the number of neutrons which penetrate the medium without collision; and

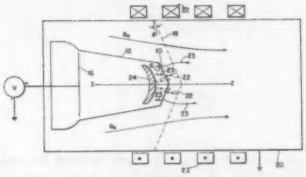
displaying the resultant count on means calibrated as the steam/water ratio of the medium subjected to radiation.

4,282,436

INTENSE ION BEAM GENERATION WITH AN INVERSE REFLEX TETRODE (IRT)

Christos A. Kapetanakos, Bethesda, Md.; John A. Pasour, Alexandria, Va.; Redge A. Mahaffey, Clinton, Md.; Jeffry Golden, Laurel, Md., and Spencer J. Marsh, Oxon Hill, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 4, 1980, Ser. No. 156,441
Int. Cl.[3] H01J *23/08*
U.S. Cl. 250—423 R 9 Claims



1. An inverse reflex tetrode receiving an electrical pulse from a pulse generator for producing and extracting a beam of ions comprising:

chamber means connected to said pulse generator for maintaining a vacuum;

a grounded cathode, coupled to said chamber means, said cathode having a curved surface and being formed from an electron-emitting material that is generally transparent to said ions;

means for supporting said cathode, said means being formed from an electrically-conducting material and being coupled to said pulse generator;

a first anode having a curved surface and being spaced apart from and approximately parallel to said cathode, said anode being formed from a generally electron-transparent, dielectric, foil material which forms a plasma that contains the ions when struck by said electrons;

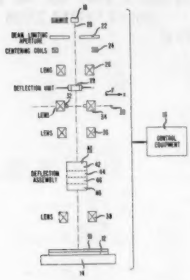
a second anode spaced apart from said first anode, the first anode being disposed between said cathode and said second anode, said first and second anodes being at the same electrical potential; and

a hollow anode stalk, a first end of said anode stalk supporting said first anode, and a second end of said anode stalk supporting said second anode, the anode stalk being coaxially aligned with and closely spaced from and surrounded by said cathode supporting means for providing low electrical inductance operation, the distance between said first and second anodes being sufficient for forming a virtual cathode therebetween, said first and second anodes and said anode stalk being electrically connected and coupled to said generator and receiving a high-voltage positive pulse from said generator so that electrons are emitted from the cathode, said electrons generally passing through the first anode and forming a virtual cathode between the first and second anodes, the electrons generally reflexing between said cathode and virtual cathode until the electrons are absorbed in the first anode and form a plasma thereon, said plasma emitting ions which propagate through the cathode.

4,282,437
CHARGED PARTICLE BEAM LITHOGRAPHY

Robert A. Boie, Bellport, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1979, Ser. No. 104,377
Int. Cl.[3] A61K *27/02*; G01K *1/08*
U.S. Cl. 250—492 A 15 Claims



1. A charged particle beam exposure system for selectively irradiating the surface of a workpiece to be patterned, said system comprising

a source of charged particles,

a planar apertured plate,

means interposed between said source and said plate for focusing said charged particles onto said plate to form a spot incident on the plane of said plate, the cross-sectional area of said incident spot being small relative to the cross-sectional area of said aperture,

the aperture in said plate being characterized by opening dimensions parallel to one axis of said plate that vary as a function of location along a positional axis of said plate,

deflection means interposed between said source and said plate for moving said incident spot to a prescribed position along said positional axis and for then scanning said incident spot across said aperture parallel to said one axis along an extent that exceeds the opening dimension of the aperture at said prescribed position,

and means interposed in the path of spots propagated through said mask plate for focusing said spots onto said workpiece surface.

4,282,438
COMPUTED TOMOGRAPHY APPARATUS AND METHOD USING PENETRATING RADIATION

Susumu Nishida, Yokohama; Tamon Inouye, Kawasaki; Tadatoki Yoshida, Tokyo, and Kiyoto Saito, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Filed Feb. 14, 1978, Ser. No. 877,730
Claims priority, application Japan, Feb. 14, 1977, 52-14116
Int. Cl.[3] G01N *21/00*
U.S. Cl. 250—445 T 10 Claims

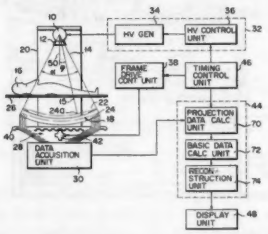
1. A computed tomography system using penetrating radiation comprising:

a radiation source for emitting penetrating radiation in a diverging beam pattern subtending an angle into the interior of a thin sliced layer portion of a subject to be examined;

a detector including detecting elements for dividing the radiation after passing through said sliced layer portion into a plurality of radiation beams penetrating said subject at various projection angles θ within the range $0 \leqq \theta \leqq \alpha, \alpha < 180°$, thereby to detect the intensity of beam penetrating said sliced layer portion;

scanning means for scanning said beam along a single substantially linear path in a direction parallel to the plane of said sliced layer portion, thereby obtaining intensity data equivalent to that obtained by radiating said sliced layer portion with parallel beams of radiation orbitally scanned about said portion through the single θ;

a data processing unit for producing data for reconstructing an image of said sliced layer portion, said data processing unit including, a projection data calculating unit for computing projection data for each of said parallel radiation beams on the basis of the detected intensity data delivered from said detector for each said set of parallel beams, and a basic data calculating unit for calculating one-dimensional Fourier transforms of said projection data for the respective radiation directions of said radiation beams



within the range $0 \leqq \theta \leqq \alpha, \alpha < 180°$, and one-dimensional Fourier expansion series on the basis of said one-dimensional Fourier transforms in order to obtain substantially one-dimensional Fourier transforms of the projection data over the full circumference of said sliced layer portion;

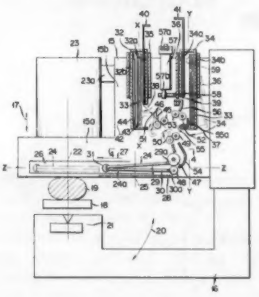
an image reconstruction unit for calculating output data of said basic data calculating unit to reconstruct the image of said sliced layer portion; and

a display unit for displaying the image of said sliced layer portion.

4,282,439
X-RAY PHOTOGRAPHING MACHINE USING SHEET FILMS

Tetsuo Matsuura, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 22, 1979, Ser. No. 68,684
Claims priority, application Japan, Aug. 25, 1978, 53-103690; Aug. 31, 1978, 53-106446; Aug. 31, 1978, 53-106448
Int. Cl.[3] G03B *41/16*
U.S. Cl. 250—470 20 Claims



1. An x-ray photographing machine comprising:

(a) an X-ray source;

(b) a movable frame adjacent said X-ray source;

(c) an elongated film supply magazine mounted on said movable frame and having top and bottom plates spaced from each other and containing unexposed sheet films, said film supply magazine being closed except for a film takeout opening formed in the top plate thereof;

(d) an elongated film takeup magazine mounted on said

movable frame and having top and bottom plates spaced from each other and containing exposed sheet films, said film takeup magazine being closed except for a film intake opening formed in the top plate thereof and facing the film takeout opening of said film supply magazine;

(e) a film carrier on said movable frame and reciprocable along a rectilinear path from a stand-by position adjacent said magazines to an X-ray exposure position adjacent said X-ray source, and

(f) a film feed mechanism operable to transfer an unexposed sheet film from said film supply magazine to said carrier in said stand-by position and to transfer an exposed sheet film from said carrier returned to said stand-by position to said film takeup magazine, said feed mechanism including sucker means located near said takeout opening of the film supply magazine to draw an exposed sheet film out of said film supply magazine through said takeout opening;

(g) said film supply magazine and film takeup magazine being spaced from each other along the rectilinear path of said film carrier, and the longitudinal axis of both said magazines extending substantially at right angles to said rectilinear path;

(h) said film feed mechanism being disposed entirely in a space confined by the longitudinal axes of said magazines and said carrier path and wherein said film feed mechanism further includes:

(a) film advance means disposed in close proximity to said film supply magazine;

(b) film feed-takeout means disposed in close proximity to said carrier in said stand-by position and operable selectively in a forward direction to feed sheet films into said carrier and in a reverse direction to take the sheet films out of said carrier;

(c) film takeup means disposed in close proximity to said film takeup magazine and operable to transfer sheet films from said carrier to said takeup magazine; and

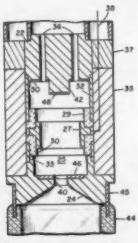
(d) film transport means operable selectively in a forward direction to transfer a sheet film from said advance means to said feed-takeout means and in a reverse direction to transfer the sheet film from said feed-takeout means to said takeup means.

4,282,440

NEUTRON ACCELERATOR TUBE HAVING IMPROVED IONIZATION SECTION

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 2, 1980, Ser. No. 145,935
Int. Cl.³ C21G 4/02
U.S. Cl. 250—499 **9 Claims**



1. In a neutron accelerator tube having a target and a spaced replenisher section for supplying accelerator gas, an ionization section located between said target and said replenisher section comprising:

(a) a means forming an ionization chamber in said tube adapted to receive accelerator gas from said replenisher section,

(b) first and second cathodes spaced from one another and having opposed active surfaces exposed to the interior of said chamber, the active surface of at least one of said cathodes being formulated of a β^- ray emitting material, and

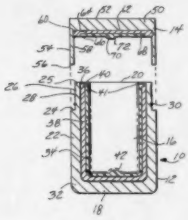
(c) anode means located at a position intermediate of said first and second cathodes whereby in response to an applied positive voltage electrons are transmitted between the opposed active surfaces of said cathodes and produce the emission of secondary electrons upon impacting an active cathode surface.

4,282,441

FILM SAFE

Richard F. Filoramo, 1330 Conge, Bloomfield Hills, Mich. 48013

Filed Jul. 2, 1979, Ser. No. 54,182
Int. Cl.³ G21F 1/00
U.S. Cl. 250—515 **15 Claims**



1. A film safe for containing photographic film comprising:

a body portion; and

a cap portion;

said body portion being open at one end and closed at the opposed end to form a hollow enclosure, said body portion comprising;

a first outer layer; and

a second layer disposed in registry with said first layer, said second layer being formed of a radiation impervious material;

said second layer being adapted to receive in registry therewith a third innermost layer for holding a roll of photographic film;

said cap portion being open at one end and closed at the opposed end to form a hollow enclosure, said cap portion comprising;

a first outer layer;

a second layer of radiation impervious material disposed in registry with the first layer; and

a third layer of a non-metallic material disposed in registry with said second layer;

said body and cap portions being engageable in a fluid-tight sealing relationship and, further, when said body and cap portions are engaged, said second layers of radiation impervious material in said body and cap portions form a continuous radiation impervious barrier around the interior of said film safe to prevent radiation from entering therein.

4,282,442

DEVICE FOR CONVERTING RECIPROCAL LINEAR MOTION TO CONTINUOUS ROTARY MOTION

Heinrich Massinger, 76 South St., Danbury, Conn. 06810

Filed Jul. 11, 1979, Ser. No. 56,538
Int. Cl.³ F16H 29/20; H02P 17/00
U.S. Cl. 290—1 C **8 Claims**

1. A device for converting reciprocal linear motion to continuous rotary motion of an output shaft, the device comprising:

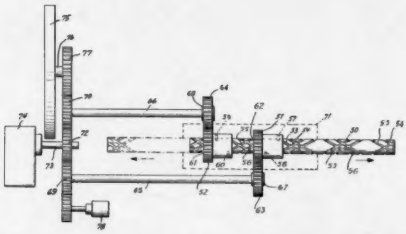
an input member movable in a reciprocal linear motion and

having a forward stroke in a first linear direction and a backward stroke in a second linear direction opposite said first linear direction;

a drive member rotatable in a first direction and a second direction opposite said first direction;

linear motion converter means for rotating said drive member in an alternating rotary motion, said converter means rotating said drive member in said first direction in response to movement of said input member in said first linear direction and rotating said drive member in said second direction in response to movement of said input member in said linear direction opposite the first linear direction;

a first gear coupled to said drive member by first one-way clutch means, said first clutch means engaging and rotating said first gear when the drive member is rotated in said first direction and disengaging and slipping with respect to said drive member when said drive member is rotated in said second direction;



a second gear coupled to said drive member by second one-way clutch means, said second clutch means disengaging and slipping with respect to said drive member when said drive member is rotated in said first direction and engaging and rotating said second gear when said drive member is rotated in said second direction;

driven shaft means rotatable in one direction, said driven shaft means having mounted thereon flywheel means for stabilizing the rotational speed of said driven shaft means and for storing energy;

gearing means connecting both said first and said second gears to one of said driven shaft means and said output shaft, and connecting the other of said driven shaft means and said output shaft to only said first gear, to provide for rotation of said driven shaft means, said output shaft and said flywheel and for returning the stored energy from the flywheel to the output shaft thereby reducing the amount of input energy needed to rotate the output shaft.

4,282,443

ENERGY CONVERSION APPARATUS

George H. Seidl, 203 Morris Ave., Trenton, N.J. 08611

Filed Oct. 26, 1979, Ser. No. 88,435

Int. Cl.³ H02K *7/02*

U.S. Cl. 290—1 R **14 Claims**

1. An energy conversion apparatus, being usable to convert any type of mechanically rotatable energy into electricity, which comprises:

(a) a support means including a first strut means and a second strut means each extending upwardly;

(b) a drive shaft means being rotatably mounted within said support means between said first strut means and said second strut means, said drive shaft means being hollow to define a conduit therethrough axially;

(c) a plurality of arm means fixedly secured with respect to said drive shaft means and extending radially outward therefrom to be rotatable therewith;

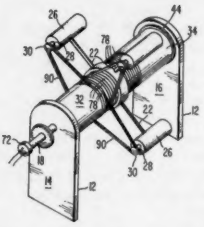
(d) a plurality of generator means secured to said arm means, each of said generator means including a rotatable rotor shaft means extending outwardly therefrom and a pulling means mounted on said rotor shaft means;

(e) a first cylinder means rotatably positioned about said drive shaft means between said arm means and said first strut means;

(f) a second cylinder means rotatably positioned about said drive shaft means between said arm means and said second strut means;

(g) an inner cylinder guide means extending around the innermost edges of said first cylinder means and said second cylinder means and being secured to said arm means to maintain horizontal orientation of said first cylinder means and said second cylinder means during rotation thereof around said drive shaft means;

(h) a first outer cylinder guide means extending around the outermost edge of said first cylinder means and being fixedly secured to said first strut means to maintain horizontal orientation of said first cylinder means in concert



with said inner cylinder guide means during rotation of said first cylinder means;

(i) a second outer cylinder guide means extending around the outermost edge of said second cylinder means and being fixedly secured to said second strut means to maintain horizontal orientation of said second cylinder means in concert with said inner cylinder guide means during rotation of said second cylinder means;

(j) a first gear assembly operably secured to said drive shaft means to be driven thereby and operably secured to said first cylinder means to rotate same in a direction opposite to the direction of rotation of said drive shaft means;

(k) a second gear assembly operably secured to said drive shaft means to be driven thereby and operably secured to said second cylinder means to rotate same in a direction opposite to the direction of rotation of said drive shaft means; and

(l) a drive means in engagement with said drive shaft means to control rotational movement thereof.

4,282,444

METHOD FOR DEEP SHAFT PUMPBACK ENERGY GENERATION

James L. Ramer, 1432 J Big Bend Rd., Waukesha, Wis. 53186

Filed Mar. 21, 1979, Ser. No. 22,560

Int. Cl.³ F01D *15/10;* **H02K** *7/18;* **B65G** *5/00;* **E21F** *17/16*

U.S. Cl. 290—52 **1 Claim**

1. The method of making a system for converting the potential energy stored in an upper reservoir of water into electric power during periods of high energy demand, use being made of a subterranean salt dome reservoir, which comprises the steps of:

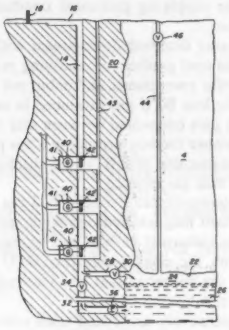
(a) forming a generally vertical shaft through rocks surrounding the salt dome between the upper reservoir and the salt dome reservoir;

(b) arranging the drive means of a hydroelectric generator intermediate the ends of said shaft;

(c) supplying water from said upper reservoir, during a period of high energy demand, to said shaft, thereby

causing the water to fall by gravity downwardly through said shaft;

(d) converting the kinetic energy of the falling water into electric energy by use of said hydroelectric generator; (e) introducing the water into the salt dome reservoir to dissolve the salt, thereby increasing the voluem of the salt dome reservoir, whereby electrical power porducing capacity is increased;



(f) electrically pumping the water from said salt dome reservoir to said upper reservoir during periods of electrical energy surplus; and

(g) repeating steps (c)–(f) above to progressively dissolve the salt and thereby progressively increase the volume of said salt dome reservoir to a specific size.

4,282,445

CIRCUIT ARRANGEMENT FOR A WINDOW-CLEANING INSTALLATION OF MOTOR VEHICLES

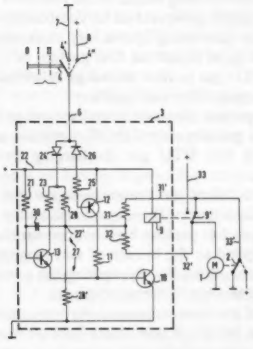
Erich Ditzer, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,697

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742888

Int. Cl.³ B60S *1/08*

U.S. Cl. 307—141 **14 Claims**



1. A circuit arrangement for a windshield cleaning installation of motor vehicles, comprising switch means, which in one engaging position operatively connects a program transmitter means for a first opening function of the cleaning installation by way of a control line means with one terminal of power supply, characterized in that the switch means, in a second engaging position, operatively connects the program transmitter means for a second operating function of the cleaning installation by way of the same control line means with the other power supply terminal, and in that the program transmitter means includes switching means for carrying out said first and second operating functions corresponding to the application of the corresponding potential to the control line means.

4,282,446

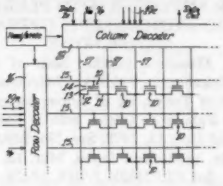
HIGH DENSITY FLOATING GATE EPROM PROGRAMMABLE BY CHARGE STORAGE

David J. McElroy, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1979, Ser. No. 80,712

Int. Cl.³ H03K *5/00;* **G11C** *11/40;* **H01L** *29/78, 27/02*

U.S. Cl. 307—238.5 **13 Claims**



1. A method of programming a memory cell of the type having a source-drain path in a semiconductor substrate, and a floating gate and a control gate over said source-drain path, comprising the steps of applying a programming voltage to one end of the source-drain path and connecting the other end to reference potential for a sufficient time to charge the capacitance of said one end to substantially said programming voltage while the voltage on said control gate is substantially at said reference potential, and thereafter applying a high voltage to said control gate to render said source-drain path highly conductive and thereby charge the floating gate.

4,282,447

SIGNAL BUFFER CIRCUIT ARRANGEMENT

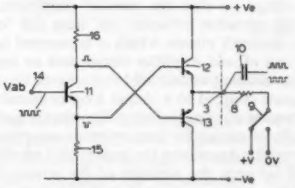
Christopher P. Summers, London, and Donald G. Thompson, Wallington, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,333

Claims priority, application United Kingdom, Sep. 26, 1977, 40033/77; May 25, 1978, 40033/77

Int. Cl.³ H03K *17/66, 17/76, 5/156*

U.S. Cl. 307—255 **2 Claims**



1. A signal buffer circuit arrangement for providing an interface between an output terminal of an integrated circuit and an external circuit, said integrated circuit being provided internally with at least two current paths, one of said current paths including a first transistor of one conductivity type and the other current path including a second transistor of the opposite conductivity type, said first and second transistors having their emitter-collector paths connected in series between supply lines and their emitters connected to said output terminal so that each of said first and second transistors is rendered separately conductive at different bias voltage levels that inhibit the conductivity of the other of said first and second transistors, said arrangement further comprising an input

transistor having its base connected to receive an input signal, and its emitter and collector connected one each to the base of a respective one of said first and second transistors to feed thereto noninverted and inverted versions of said input signal, a load resistor external of said intergrated circuit connected to said output terminal, and means external of said integrated circuit for connecting said load resistor selectively to one of at least two bias voltage sources providing said different bias voltage levels such that one of said first and second conductors is biased for conduction and the other is cut-off.

4,282,448

MONOSTABLE MULTIVIBRATOR AND FM DETECTOR CIRCUIT EMPLOYING COMMON EMITTER TRANSISTOR AMPLIFIER WITH PLURAL EMITTER RESISTORS TO AVOID CIRCUIT OPERATION FROM SIGNAL NOISE

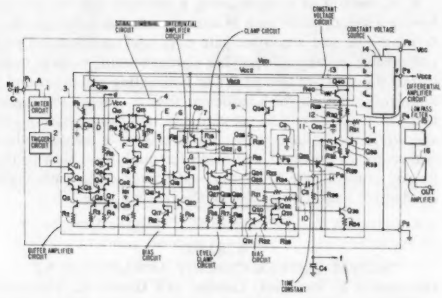
Takeshi Wada; Masanori Ienaka, both of Kodaira; Yasuo Kominami, Kokubunji; Yukihiko Miyamoto, and Tsuneo Yamada, both of Tokyo, all of Japan, assignors to Hitachi, Ltd. and Trio Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 969,085

Claims priority, application Japan, Mar. 15, 1978, 53-28658

Int. Cl.³ H03K *3/033, 17/16*

U.S. Cl. 307—273 **5 Claims**



1. In a monostable multivibrator comprising:

a time constant circuit which includes a capacitor;

an amplifier circuit which comprises a pair of transistors whose emitters are coupled in common with each other a base of one of the pair of transistors being supplied with an output from said time constant circuit while a base of the other of the pair of transistors being supplied with a reference voltage so that the pair of transistors performs switching operation between "on" state and "off" state,

a positive feedback circuit which is connected between an output end of said amplifier circuit and an input end of said time constant circuit; and

trigger means coupled to a circuit loop constructed of said time constant circuit, said amplifier circuit and said positive feedback circuit the improvement comprising emitter resistances for decreasing the gain of said amplifier circuit inserted between the junction of the common coupling and the respective emitters of said pair of transistors.

4,282,449

COAL GASIFIER SUPPLYING MHD-STEAM POWER PLANT

Carl R. Bozzuto, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 3, 1979, Ser. No. 63,234

Int. Cl.³ H02N *4/02*

U.S. Cl. 310—11 **7 Claims**

1. A system for generating power from the combustion of coal and air comprising:

(a) a magnetohydrodynamic generator having a burner for producing a high temperature working gas and a generation channel for directly generating electric power from the high temperature working gas, the generation channel connected to the burner so as to receive the high temperature working gas;

(b) an atmospheric coal gasifier for producing a combustible low BTU gas, a first portion of which is to be combusted in the burner of said magnetohydrodynamic burner;

(c) a source of coal connected to said gasifier;

(d) means for supplying preheated combustion air to said coal gasifier;

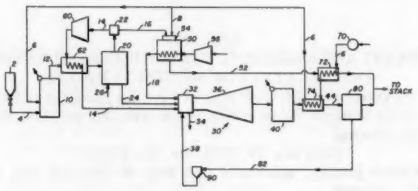
(e) a gas cleaner disposed downstream with respect to gas flow of said coal gasifier for removing particulate matter, gaseous sulfur compounds, and unburned carbon from the combustible low BTU gas produced in said gasifier;

(f) a first gas pass connected between said coal gasifier and said gas cleaner thereby providing a gas path for conveying the combustible low BTU gas discharging from said gasifier to said gas cleaner;

(g) means interconnected between said gas cleaner and the burner of said magnetohydrodynamic generator for conveying the unburned carbon and particulate matter removed from the combustible low BTU gas in said gas cleaner to the burner of said magnetohydrodynamic generator for combustion therein;

(h) means operatively associated with said gas cleaner for selectively splitting the clean combustible low BTU gas discharging therefrom into a first and a second portion;

(i) a second gas pass connected between said splitting means and the burner of said magnetohydrodynamic generator thereby providing a gas path for conveying the first portion of the clean combustible low BTU gas discharging from said splitting means to the burner of said magnetohydrodynamic generator to be combusted therein, said second gas pass being operatively associated with said first pass so as to direct the first portion of clean combustible low BTU gas in heat exchange relationship with the gas discharging from said gasifier;



(j) a compressor disposed in said second gas pass for increasing the gas pressure of the first portion of the clean combustible low BTU gas discharging from said splitting means;

(k) a direct-fired air heater having a burner wherein the second portion of the clean combustible low BTU gas is combusted to preheat high temperature combustion air to be supplied to the burner of said magnetohydrodynamic generator, and a flue for venting the combustion products formed therein to the atmosphere;

(l) a third gas pass connected between said splitting means and the burner of said direct-fired air heater thereby providing a gas path for conveying the second portion of said clean combustible low BTU gas discharging from said splitting means to the burner of said direct-fired air heater; and

(m) a vapor generator connected to the generation channel of said magnetohydrodynamic generator so as to receive the high temperature working gas passing out of the generation channel, said vapor generator having heat transfer surface whereby heat is transferred from the high temperature working gas to a liquid to generate a vapor as a

source of power, and a flue for venting the working gas passing therethrough to the atmosphere.

4,282,450

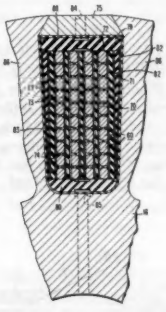
DYNAMOELECTRIC MACHINE WITH CRYOSTABLE FIELD WINDING

Phillip W. Eckels, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 25, 1979, Ser. No. 78,751

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **13 Claims**



1. In a superconductive cylindrical rotor for a dynamoelectric machine said rotor, rotatable about an axis, having on its outer periphery a plurality of slots, each slot extending substantially along the length of the rotor, a slot assembly disposed within each of said slots, said assembly comprising:

a plurality of slot walls which extend in a generally radial direction relative to said rotor axis;

a plurality of conductor columns, each column having a plurality of superconductors, stacked one on top of another, in a generally radial direction relative to said rotor axis;

each superconductor having a generally rectangular cross section, with bare surfaces generally parallel to said side walls, and other surfaces generally perpendicular to said parallel surfaces, said other surfaces having insulating material thereon;

an insulative slot liner disposed about the slot assembly between the slot assembly and said slot walls;

a plurality of insulative separators, one on each radial side of each conductor column, said separators having surfaces parallel to said side walls, said parallel surfaces having a plurality of coolant channels thereon;

a plurality of side insulation panels, at least one of said side insulation panels being disposed on each side of the slot assembly and adjacent the slot liner, each of said side insulation panels having on at least one of its surfaces at least one coolant channel, said channel being tapered so as to be generally narrower nearer the rotor shaft;

means for introducing coolant into said channels; and

means for removing coolant from said channels.

4,282,451

SOLID ROTOR FOR ASYNCHRONOUS ELECTRICAL MACHINES

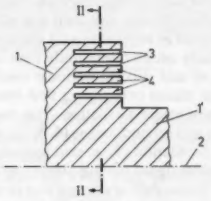
Tihomir Bratoljic, Wettingen, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Continuation of Ser. No. 818,804, Jul. 25, 1977. This application Apr. 10, 1979, Ser. No. 28,660

Claims priority, application Switzerland, Aug. 9, 1976, 10129/76

Int. Cl.³ H02K *1/22*

U.S. Cl. 310—262 **10 Claims**



1. A solid rotor for an asynchronous electrical machine wherein annular rings separated by intervening grooves are provided on the rotor end faces and wherein the rings are formed between grooves bounded by conical surfaces.

4,282,452

METHOD AND CIRCUIT ARRANGEMENT FOR ENERGIZING ULTRASONIC TRANSDUCERS WHICH ARE UTILIZED IN IMPULSE ECHO TECHNOLOGY

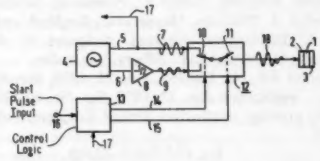
Dieter Hassler, Uttenreuth, and Robert Schwarz, Hessdorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,866

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813729

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—317 **15 Claims**



1. A circuit arrangement for carrying out the method comprising:

generating an electric high frequency pulse in the form of a driving periodic oscillation of predetermined amplitude and of a driving frequency corresponding to a useful resonance frequency of an ultrasonic transducer, and having a first phase, generating a stop signal whose frequency is the same as said driving frequency but having a second phase offset by substantially 180° in relation to the first phase of said driving periodic oscillation, applying to said ultrasonic transducer a predetermined number of periods of said driving periodic oscillation (7) of said predetermined amplitude and of said driving frequency and of said first phase, and then applying to said ultrasonic transducer said stop signal (9) having the same frequency as said driving frequency, having said second phase offset by substantially 180° in relation to said first phase, and having a substantially smaller amplitude than said predetermined amplitude of said periodic oscillation (7),

said circuit arrangement comprising

an ultrasonic transducer having the useful resonance frequency,

oscillator means for generating a driving periodic oscillation of said predetermined amplitude and of said driving frequency corresponding to said useful resonance frequency and of said first phase, and for thereafter generating said stop signal of the same frequency as said driving frequency but having a second phase offset by substantially 180° relative to said first phase, and

control means controlling said oscillator means to supply to said ultrasonic transducer first said predetermined number of periods of said driving periodic oscillation of said predetermined amplitude, and then said stop signal, such that said stop signal as applied to said ultrasonic transducer has a substantially smaller amplitude than said predetermined amplitude of said driving periodic oscillation,

said oscillator means comprising first means (**5**) for supplying a first sinusoidal oscillation (**7**) as said driving periodic oscillation, and second means (**6, 8**) for supplying a second sinusoidal oscillation (**9**) as said stop signal with said second sinusoidal signal having about one-half the amplitude and a 180° phase shift in comparison to said first sinusoidal oscillation, and said control means comprising switching means (**10, 11**) between said first and second means and said ultrasonic transducer for first supplying said predetermined number of periods of said first sinusoidal oscillation (**7**) to said ultrasonic transducer and then supplying to said ultrasonic transducer a predetermined number of periods of said second sinusoidal oscillation (**9**), said second means comprising an output (**6**) supplying a sinusoidal oscillation corresponding to said first sinusoidal oscillation, and phase inversion and amplitude attenuation means (**8**) connected with said output (**6**) and with said switching means (**10, 11**) for supplying said second sinusoidal oscillation (**9**) to said switching means.

4,282,453

TRANSDUCER APPARATUS FOR DETECTING AIRBORNE PRESSURE PULSE

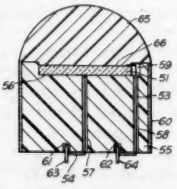
Lindsay C. Knight, Albury, Australia; David A. Cash, Camberley, England; Duncan Stewart, Farnham Common, England; Robert A. Cottis, Maidenhead, England; William H. Bowyer, Farnham, England; Robert C. Newnham, Slough, England; Frederick J. Williams, Meppershill, England, and David W. Pardon, Bennington, England, assignors to Australasian Training Aids (Pty.) Ltd., Albury, Australia

Division of Ser. No. 879,458, Feb. 21, 1978, abandoned. This application Jun. 22, 1979, Ser. No. 51,125

Claims priority, application United Kingdom, Feb. 21, 1977, 7253/77

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—335 **32 Claims**



1. A transducer apparatus for producing a timing signal in response to an airborne pressure pulse arriving from any direction substantially within a hemisphere and impinging on the apparatus, comprising:

an element for producing an electrical signal when subjected to mechanical stress, said element having a predetermined acoustic impedance; and

a solid member having a generally hemispherical dome-shaped upper surface exposed to said airborne pressure pulse and an opposing lower surface acoustically coupled at a central area thereof to a surface of said signal producing element, said solid member being of a material which has an acoustic impedance intermediate the respective acoustic impedances of air and of said output signal element, wherein a radial length between a central point of said element and said exposed upper surface is substantially constant with angle,

whereby, when an airborne pressure pulse impinges substantially tangentially at a point on said exposed upper surface, a resulting compression wave is propagated through said solid member at a velocity greater than the speed of sound in air, said compression wave subjecting said element to mechanical stress such that an electrical signal is produced, said electrical signal having a rise time and polarity which are substantially independent of where the airborne pressure pulse first impinges on said exposed upper surface.

4,282,454

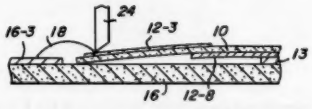
PIEZOELECTRIC CRYSTAL MOUNTING AND CONNECTION ARRANGEMENT

Emory Wakat, Jr., Plantation; Lawrence N. Dworsky, Coral Springs; Leo V. Krolak, Plantation; Jeffery A. Whalin, Palm Springs, all of Fla., and Harold W. Mech, Bloomingdale, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1979, Ser. No. 33,774

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—348 **6 Claims**



1. A mounting and connecting arrangement for a crystal plate as for use in an electronic device and comprising in combination:

a flexible crystal plate;

at least one pair of conductive areas formed on the plate, one of each pair of areas being formed on a first surface of the plate, and one of each pair of areas being formed on a second surface, each pair of conductive areas including opposed, active portions and unopposed terminal portions, the opposed portions being spaced apart from the supported area of the plate and the terminal portions on the second surface positioned adjacent the edge of the plate;

a base member;

a relatively low pedestal having the lower side thereof fixedly attached to the base member, and the center of the first surface of the plate attached to the upper side of the pedestal;

at least one conductive element formed on the pedestal and the base member for making contact to the terminal portion of one of the conductive areas on the first crystal surface;

at least one conductive area formed on the base member beyond and adjacent the outer edge of the plate; and

flexible wire bonds coupling respective ones of the terminal portions on the second surface of the plate to respective ones of the conductive areas formed on the base member beyond the edge of the plate.

4,282,455

MERCURY DISPENSER FOR ARC DISCHARGE LAMPS

Frank M. Latassa, Magnolia; Roland L. Bienvenue, Lawrence; Charles H. Poirier, Topsfield, and John Wallace, Salem, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 7, 1979, Ser. No. 92,000
Int. Cl.[3] H01J *61/28*
U.S. Cl. 313—177 **2 Claims**

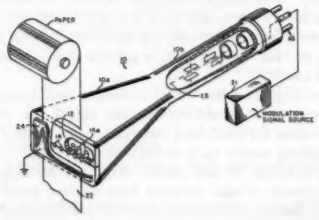
1. In an arc discharge lamp having a glass mount at one end with a cathode supported on the mount, the improvement comprising: a disintegration shield encircling the cathode except for a narrow gap between the ends of the shield; and a mercury containing metal capsule disposed in the gap and electrically connected to the ends of the shield, the metal capsule having been formed from a cup having a larger diameter portion and a smaller diameter portion, the larger diameter portion having been flattened and sealed, the larger diameter being the part of the capsule that is electrically connected to the ends of the shield so that when an RF current is induced in the shield the current flow through the capsule primarily occurs through the flattened larger diameter portion.

4,282,456

FACEPLATE FOR AN ELECTROSTATIC PRINTING TUBE AND METHOD OF MAKING SAME

William W. Stein, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 8, 1978, Ser. No. 940,546
Int. Cl.[2] H01J *9/18, 31/02*
U.S. Cl. 313—419 **7 Claims**



5. A faceplate for use in conjunction with a cathode ray tube comprising:

two sheets of low dielectric constant glass having surfaces to be sealingly secured together thereby forming a single glass sheet;

electrically conductive pins that are sealingly embedded within said surfaces when said sheets of glass are sealingly secured together; said conductive pins being spaced from each other along said single glass sheet and extending from one outside surface to the other outside surface of said single glass sheet with ends of said conductive pins being exposed and substantially coplanar with said outside surfaces; and

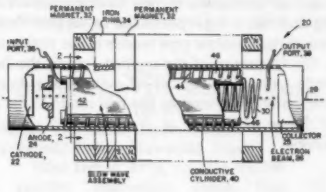
planar electrically conductive pads engaging and extendig along one of said outer surfaces substantially at right angles with respect to said conductive pins, said conductive pads being spaced from each other and each of said conductive pads being electrically connected to an exposed end of a respective one of said conductive pins, said conductive pads being formed on said one of said outer surfaces by using said conductive pins to fix photoresist disposed on a transparent conductive layer by shining light through said single glass sheet which is titled at an angle relative to said light source and removing the transparent conductive layer not covered with fixed photoresist thereby leaving said conductive pads on said one of said outer surfaces in electrical connection with their respective conductive pins.

4,282,457

BACKWARD WAVE SUPPRESSOR

Robert Harper, Concord, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 18, 1979, Ser. No. 49,378
Int. Cl.[3] H01J *25/34*
U.S. Cl. 315—3.6 **15 Claims**



1. A traveling wave tube comprising:

a first slow wave low-loss structure having a longitudinal axis coincident with the longitudinal axis of said tube;

a second slow wave non-lossy structure positioned outside the first slow wave structure and coaxial therewith;

a set of insulating supports positioned between said first slow wave structure and said second slow wave structure for supporting said second slow wave structure at circumferentially spaced points;

an outer conducting tube enclosing said second slow wave structure and electrically contacting said circumferentially spaced points of said second slow wave structure to form transverse segments of said second slow wave structure extending transversely to said axis between said spaced-apart points each segment being spaced from said outer conducting tube except where said segments and said tube are in electrical contact; and

at least one electrically lossy dielectric slab;

said slab being positioned in the space between said second slow wave structure segments and said conducting tube;

the lossy slab being dissipative to the electromagnetic energy of the frequency to which said transverse segments of said second slow wave structure are responsive.

4,282,458

WAVEGUIDE MODE COUPLER FOR USE WITH GYROTRON TRAVELING-WAVE AMPLIFIERS

Larry R. Barnett, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 11, 1980, Ser. No. 129,301
Int. Cl.[3] H01J *25/00*; H01P *1/163*
U.S. Cl. 315—4 **7 Claims**

1. A waveguide coupler for gyrotron traveling-wave amplifiers comprising:

a first section of hollow conductive waveguide;

a reflective-plane conducting wall spaced apart from an end of the first waveguide section a given distance to form a

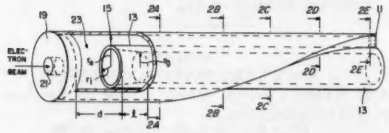
gap in the conductive boundary formed by the first waveguide section and the wall,

the wall having a hole for passage of an electron beam;

the first waveguide section forming an output port of the coupler;

a second section of hollow conductive waveguide disposed external to and coaxial with at least a portion of the first waveguide section and extending to the wall to provide a conductive boundary surrounding the gap,

the region between the second and first waveguide sections forming an input port of the coupler; and



means for applying electromagnetic waves in a hollow pipe mode to the input port,

the second waveguide section having a cut-off determining dimension r_e proportioned to support first and second distinct hollow pipe modes in the region of the gap at the frequency of the applied waves, the first waveguide section having cut-off-determining dimensions r_i proportioned to support the first mode to the exclusion of the second mode at the frequency of the applied waves.

4,282,459

MAGNETRON

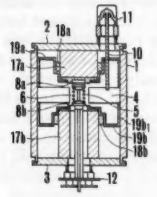
Tomokatsu Oguro, 923-13, Nakanoshima, Mobara City, Chiba Prefecture, Japan

Filed Sep. 4, 1979, Ser. No. 72,006

Claims priority, application Japan, Sep. 6, 1978, 53-108656

Int. Cl.[3] H01J *25/50*

U.S. Cl. 315—39.71 **5 Claims**



1. A magnetron comprising a cylindrical anode having a plurality of vanes arranged radially to surround a cathode, an interaction space defined by a space between the tip of said vanes and said cathode, a pair of permanent magnets being opposed to each other with the interaction space therebetween and magnetized axially, and a repulsive magnet arranged around the outer periphery of at least one of said pair of permanent magnets and at one end of the permanent magnet close to the interaction space, said repulsive magnet being magnetized in a direction substantially perpendicular to the magnetization direction of said permanent magnet with the polarity made identical with that of said permanent magnet in the proximity thereof.

4,282,460

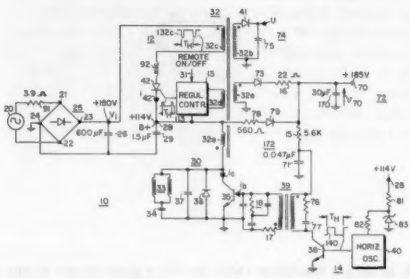
DEFLECTION AND POWER SUPPLY CIRCUIT WITH REDUCED START-UP DRIVE

David W. Luz, and Donald H. Willis, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 19, 1979, Ser. No. 92,227

Int. Cl.[3] H01J *29/70, 29/76*

U.S. Cl. 315—411 **9 Claims**



1. A deflection and power supply circuit, comprising:

a deflection winding;

a deflection generator including transistor switching means coupled to said deflection winding for generating scanning current in said deflection winding;

a source of DC supply voltage;

power supply means coupled to said deflection generator and responsive to the state of an on/off command signal for energizing said deflection generator;

means for applying said DC supply voltage to an input terminal of said power supply means during both states of said on/off command signal, said power supply means developing an operating voltage at an output terminal only during the on-state of said command signal;

a transformer including first and second windings, said first winding coupled to said power supply means and to said transistor switching means;

a load circuit;

a first auxiliary power supply coupled to said second winding and to said load circuit for providing power to said load circuit, with current drawn by said auxiliary power supply developing collector current in said transistor switching means, said auxiliary power supply drawing a transient load current during a start-up interval after initiation of said on-state that is greater than the steady-state load current;

a driver stage coupled to said transistor switching means and responsive to a deflection rate signal for periodically providing forward base current to turn on said transistor switching means each deflection cycle; and

means coupled to said driver stage for holding the peak magnitude of said forward base current each deflection cycle during said start-up interval to a magnitude less than that reached during said steady-state interval in order to limit said transistor switching means collector current when said auxiliary power supply draws said transient load current.

4,282,461

TELEVISION RASTER CENTERING AID

Paul B. Simon, Lititz, and Robert L. Barbin, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,696

Int. Cl.[3] H01J *29/54*

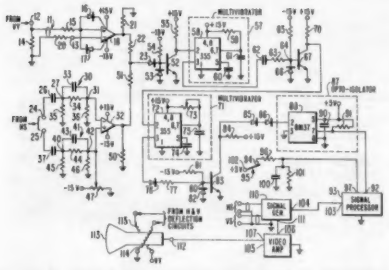
U.S. Cl. 315—398 **8 Claims**

1. A television raster centering aid comprising:

means for forming a flat-field raster on a television display

screen including means for deflecting an electron beam horizontally and vertically across said screen in a predetermined pattern;

means coupled to said deflecting means for detecting the time of occurrence of substantially minimum vertical



deflection of said electron beam and generating a signal as an indication thereof; and

means responsive to said signal for interrupting said flat-field raster formation by blanking a horizontal scan line of said raster.

4,282,462

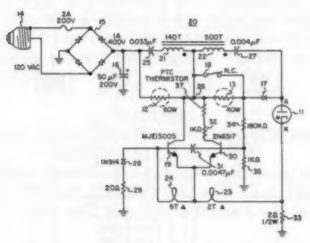
ARC LAMP LIGHTING UNIT WITH MEANS TO PREVENT PROLONGED APPLICATION OF STARTING POTENTIALS

William Peil, North Syracuse, and Robert J. McFadyen, Syracuse, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Oct. 16, 1979, Ser. No. 85,441

Int. Cl.³ H01J *7/44, 17/34, 19/78;* **H01K** *1/62*

U.S. Cl. 315—46 **5 Claims**



1. A lighting unit comprising:

A. a dc power supply having a first and a second output terminal,

B. a main arc lamp requiring energization dependent on its electrical state connected in a series path between a node and said second supply output terminal,

C. a filamentary resistance for providing standby illumination, said filamentary resistance being connected in a series path between said first supply output terminal and said node for normal energization and resistive ballasting of said main lamp,

D. an electrical transformer having a primary winding connected in a series path between said first supply output terminal and said node and a second winding connected in a series path between said node and one terminal of said main lamp for applying lamp starting potentials when an alternating potential is applied to the primary thereof,

E. a monostable, normally non-conductive, solid state switch comprising a first transistor connected in a series path between said node and said second supply output terminal, intermittent operation thereof developing

(1) an alternating potential in said primary winding and a transformed alternating potential in said second winding for starting or restarting said main lamp, and

(2) a pulsating current in said filamentary resistance,

F. a trigger oscillator responsive to the electrical state of said main lamp for causing intermittent switch conduction for starting or restarting said main lamp, comprising a second transistor having base, emitter and collector electrodes, connected in an oscillatory configuration, and

G. means for latching said trigger oscillator in a non-oscillatory condition when said intermittent operation is excessively long, said latching means comprising a positive temperature coefficient resistor thermally coupled to a member experiencing a greater temperature rise during starting or restarting than during normal energization, and electrically connected in the current path to the collector of said second transistor, said resistor, when at a low temperature corresponding to normal operation permitting oscillation and when at an elevated temperature corresponding to abnormal operation, stopping oscillation at a current level providing sufficient self-heating in said resistor to prevent further oscillation until said lighting unit is de-energized and said resistor is allowed to cool.

4,282,463

MAGNETRON WITH CONTINUOUS MAGNETIC CIRCUIT

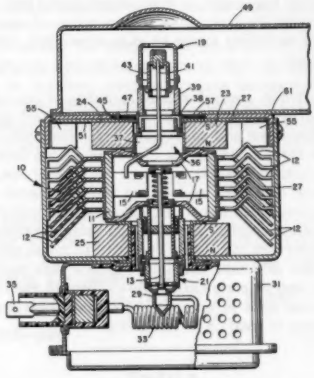
Kaichiro Nakai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 4, 1979, Ser. No. 81,788

Claims priority, application Japan, Oct. 16, 1978, 53/141702[U]

Int. Cl.³ H01J *25/50*

U.S. Cl. 315—39.71 **9 Claims**



1. In a magnetron comprising:

a cylindrical anode having a plurality of vanes forming anode cavities;

a cathode positioned coaxially in said anode;

an output portion including a metal cylinder coupled to said anode;

An annular permanent magnet;

a yoke adjacent said permanent magnet to form a magnetic circuit therewith, said yoke having an opening through which said output portion extends, the diameter of said opening being greater than or substantially equal to the center diameter of said magnet; and

a gasket positioned in said opening between said metal cylinder and said yoke, the improvement comprising a magnetic shim plate extending the entire length of said perma-

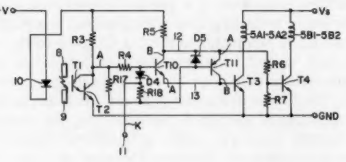
nent magnet and positioned between said permanent magnet and said yoke, said magnetic shim plate being in contact with said permanent magnet to form a continuing magnetic circuit without any gaps.

4,282,464

REVERSIBLE DRIVE CIRCUIT FOR BRUSHLESS DC MOTOR

Mitsuo Uzuka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,415
Claims priority, application Japan, Mar. 24, 1979, 54/34941
Int. Cl.[3] H02P *6/02*
U.S. Cl. 318—138 **20 Claims**



1. In a reversible drive circuit for a DC motor of the type having a rotor adapted to rotate about an axis, a stator, at least two coils included in one of said stator and said rotor, and flux generating means included in the other of said stator and rotor, said reversible drive circuit comprising:

first switching means for energizing one of said coils;

second switching means for energizing another of said coils;

means for generating a position signal corresponding to the rotational position of said rotor;

means for producing a control signal corresponding to a desired rotational direction of said rotor;

first switch control means including a first switch control transistor responsive to said control signal and said position signal for controlling the operation of said first and second switching means so as to rotate said rotor in one direction;

and

second switch control means including a second switch control transistor responsive to said control signal, said position signal and an output of said first switch control means for controlling the operation of said first and second switching means so as to rotate said rotor in the opposite direction, said second switch control transistor being connected in parallel with said first switch control transistor, wherein said first and second switch control transistors are alternately operative to rotate said rotor in said one direction and said opposite direction, respectively, and wherein current flows through each of said at least two coils in only one direction, regardless of the direction of rotation of said rotor.

4,282,465

VEHICLE CONTROL SYSTEM

Frank E. Acker, Forest Hills, and Charles D. Rogers, Monroeville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 874,079, Feb. 1, 1978, abandoned. This application Jun. 16, 1980, Ser. No. 159,544
Int. Cl.[3] H02P *5/06*
U.S. Cl. 318—139 **21 Claims**

11. A Control system for an electrically powered vehicle having an electronic circuit acting as a chopper in a power circuit connected between a power source and a traction motor comprising

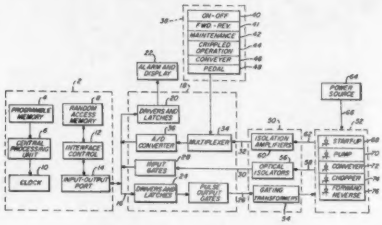
a digital computer mounted on the vehicle,

a plurality of means mounted on the vehicle for providing operator initiated control signals to the computer,

a plurality of means mounted on the vehicle for providing vehicle and power circuit condition signals to the computer,

a random access memory in the computer for storing the operator initiated control signals and the vehicle and power circuit condition signals,

a programable memory in the computer for programing the



computer to cyclically compare the values of the stored signals with desired values and to store the comparisons in the random access memory, and

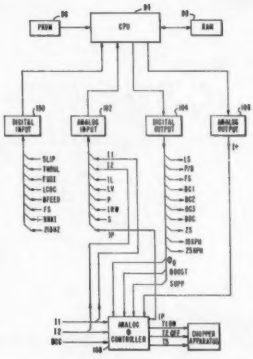
means responsive to selected stored signals and selected comparisons operating within a program stored in the programable memory for providing gating pulses to the electronic circuit.

4,282,466

TRANSIT VEHICLE MOTOR EFFORT CONTROL APPARATUS AND METHOD

Thomas C. Matty, North Huntingdon Township, Irwin County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 709,821, Jul. 29, 1976, abandoned. This application Apr. 27, 1978, Ser. No. 902,001
Int. Cl.[3] H02P *7/00*
U.S. Cl. 318—434 **26 Claims**



1. In an effort control apparatus for an electric motor having an armature and operative with an effort request signal and a power supply for supplying line current and line voltage to determine the operation of said motor, the combination of

means for providing a retard effort control parameter for each of predetermined time intervals by determining for each said time interval the present value of said retard effort control parameter in response to each of said line voltage and said line current,

means for subtracting from said effort request signal the present value of said retard effort control parameter for providing a current request for controlling the armature current of said motor for each said time interval, and

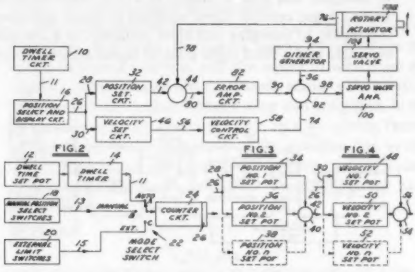
means for supplying to said retard effort control parameter providing means the value of each of the line voltage and the line current for each said time interval.

4,282,467

CONTROLLER SYSTEM FOR ROTARY ACTUATOR

William G. Gruesbeck, Gettysburg, Ohio, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 28, 1979, Ser. No. 79,666
Int. Cl.[3] G05B *13/00*
U.S. Cl. 318—561 9 Claims



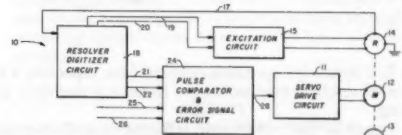
1. An actuator system comprising an actuator means having a position feedback means attached thereto, a servo valve means, a servo valve amplifier means, a first summing means having a position error input and a velocity control input, a position error amplifier feeding said first summing means, a second summing means feeding said position error amplifier means, and the improvement comprising an electrical controller means having means for selectively setting and continuously controlling a first position control signal, mixing said position control signal with a signal from said position feedback means in said second summing means and feeding this difference signal into said position error amplifier means, means for selectively setting and controlling a second position control signal, means for selectively setting and controlling a first velocity control signal and feeding said velocity control signal into said first summing means, means for selectively setting and controlling a second velocity control signal, mode selection and control means for simultaneously selecting said first position signal and said first velocity signal and automatically selecting said second position signal and said second velocity signal for moving from a first actuator position to a second actuator position and means to maintain said second actuator position.

4,282,468

HIGH SPEED POSITION FEEDBACK AND COMPARATOR SYSTEM

Thomas Barker, South Holland; Andrew L. Russel, Jr., Bridgeview; Gary Bricault, Oak Lawn, all of Ill., and Albert L. Van Wieren, Griffith, Ind., assignors to Hyper-Loop, Inc., Bridgeview, Ill.

Filed Apr. 16, 1979, Ser. No. 30,079
Int. Cl.[3] G05B *1/01*
U.S. Cl. 318—608 20 Claims



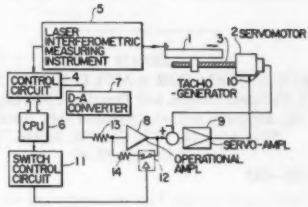
1. In a digital control system for controlling movement of an element with respect to a reference position, feedback signal means for generating feedback signals in response to movement of said element with respect to said reference position with each feedback signal having a phase shift corresponding in direction and magnitude of the movement of the element since the next previous feedback signal, and pulse train generating means for operating in response to said feedback signals to generate output signals which indicate both the direction and magnitude of said phase shifts and which include sequential trains of pulses with the number of pulses in each train corresponding to the magnitude of the corrsponding phase shift.

4,282,469

POSITIONING CONTROL SYSTEM

Shigeo Moriyama, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1980, Ser. No. 115,410
Claims priority, application Japan, Feb. 7, 1979, 54-12273
Int. Cl.[3] G05B *5/01*
U.S. Cl. 318—619 11 Claims



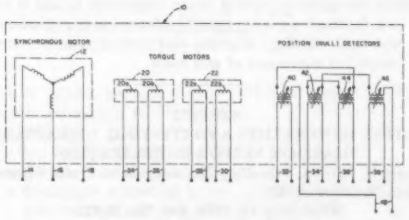
1. A positioning control system for positioning an object at a desired target position by use of a servo system comprising: means for measuring the present position of said object; means for calculating the position deviation between the present position and the desired target position of said object and for generating a control signal representing said position deviation including means for comparing the position deviation with a predetermined value; a servo system including variable gain servo means for moving said object to the desired target position in response to said control signal on the basis of a first value of position feedback gain, when the position deviation is greater than said predetermined value; and control means for initially increasing the gain of said servo means to a second value to provide a control signal greater than the control signal provided by said first value of position feedback gain when said position deviation is smaller than said predetermined value and for thereafter changing the gain of said servo means back to said first value to position said object at the desired target position.

4,282,470

CLOSE LOOP CONTROL APPARATUS AND METHOD FOR A FORCE REBALANCE TRANSDUCER

Christopher I. Reynolds, Walpole, Mass., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 30, 1979, Ser. No. 34,353
Int. Cl.[3] B64C *17/02*
U.S. Cl. 318—648 19 Claims



1. In a closed loop control system for maintaining a force transducer assembly in a balanced position, said transducer assembly having a sensing element for providing an error signal representing a sensed perturbation from said balanced

position, said assembly having a rebalance transducer, and said system providing a force rebalance signal during each of a succession of time intervals to actuate said rebalance transducer to provide a restoring force to counteract a said sensed perturbation for maintaining said sensing element in said balanced position, the improvement comprising

a feedback loop control circuit having

means responsive to said error signal for providing a respective digital representation for the rebalance signal for each of said successive time intervals, and

means responsive to said digital representations for providing said force rebalance signal to said rebalance transducer assembly during each time interval at one of a plurality of predetermined discrete amplitude values, said rebalance signal having a constant amplitude during each said interval.

4,282,471

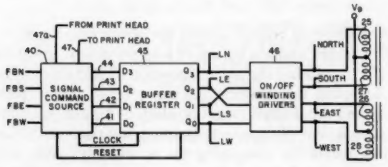
CONTROL SYSTEM FOR A MULTI-PHASE MOTOR

Mitchell S. Budniak, Skokie, and Donald P. Martin, Wheeling, both of Ill., assignors to Qwint Systems Inc., Northbrook, Ill.

Filed May 14, 1979, Ser. No. 38,946

Int. Cl.[3] G05B *19/40*

U.S. Cl. 318—685 **40 Claims**



1. A control system for controlling a motor of the type having a plurality of electromagnetic field windings adapted to be separately energized to control rotation of a rotor in the motor, at least a pair of said plurality of electromagnetic field windings having mutual inductance therebetween, rotational movement of the rotor of said motor causing a back EMF to be induced into an unenergized one of said plurality of electromagnetic field windings, said back EMF superimposed upon another signal induced into said unenergized winding due to mutual inductance between said unenergized winding and an energized winding of said plurality of windings, said control system comprising:

electronic simulation means for simulating the signal induced into said unenergized winding due to mutual inductance with said energized winding;

back EMF detecting means responsive to said simulated signal and to the signal induced into said unenergized winding with the back EMF superimposed thereon to develop at least one feedback signal upon detecting said back EMF; and

motor energization control means responsive to said at least one feedback signal to control subsequent energization of said field windings whereby said control system controls rotational movement of said rotor.

4,282,472

DIGITAL GENERATION AND CONTROL OF VARIABLE PHASE-ON MOTOR ENERGIZATION

Donald P. Martin, Wheeling, Ill., assignor to Qwint Systems, Inc., Northbrook, Ill.

Filed May 14, 1979, Ser. No. 38,922

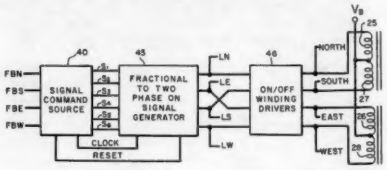
Int. Cl.[3] G05B *19/40*

U.S. Cl. 318—696 **9 Claims**

1. A control system for controlling a motor subject to variable load conditions and of the type having a plurality of electromagnetic field windings adapted to be separately energized to control rotation of a rotor in the motor, said control system comprising:

switching means for controlling energization of each of said electromagnetic field windings in response to an applied logic control signal;

signal generating means for simultaneously generating a first logic control signal adapted to cause said switching means to energize said field windings in a two-phase-on mode, a second logic control signal adapted to cause said switching means to energize said field windings in a one-phase-on mode and a third logic control signal adapted to cause



said switching means to energize said field windings in a fractional-phase-on mode;

means for detecting rotational movement of the rotor in said motor, said detecting means providing at least one feedback signal in response to movement of said rotor;

logic signal selecting means responsive to said feedback signal for selecting and applying one of said phase-on logic control signals to said switching means whereby said motor is selectively energized in a two-phase-on mode, a single-phase-on mode or a fractional-phase-on mode in response to changes in the load condition of the motor.

4,282,473

ROTATING FIELD MACHINE DRIVE AND METHOD

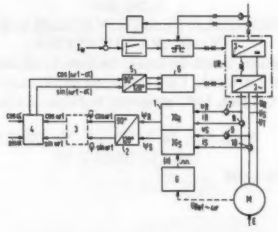
Walter Dreiseitl; Dieter Köllensperger; Theodor Salzmann, all of Erlangen; Thomas Schlegel, Hemhofen, and Wolf-Dieter Weigel, Kleinsendelbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1979, Ser. No. 58,830

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833542

Int. Cl.[3] H02P *7/42*

U.S. Cl. 318—803 **14 Claims**



1. In a device for a rotating-field machine, especially a synchronous machine supplied from a frequency converter comprising:

a control for the converter for self-controlled, field-oriented operation of the machine comprising two AC voltage integrators of identical design for forming two electric voltage signals each of which is proportional to a different flux component in the rotating field machine,

each integrator comprising a zero-controller having negative feedback for suppressing the DC component of the integrator output voltage, the input of each zero-controller being tied to the output of the integrator and the output of each zero-controller being coupled to a sum-

ming junction at the input of the integrator, and in which each integrator has, as input voltages, a voltage proportional to a phase voltage belonging to a flux component and a voltage proportional to the phase current in a supply lead, for compensating the ohmic stator voltage drop, and in which another phase current dependent voltage is processed for compensating the inductive stray voltage drop, the improvement comprising:

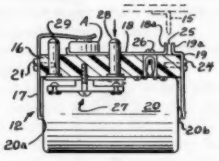
each zero controller having a proportional controller and an integrated controller, the output signals of which are fed to the summing junction, and the inputs of which are fed signals, compensated for the ohmic stator voltage drop and the inductive stray voltage drop and weighted, in the case of the proportional controller, by a weighting factor, proportional to the frequency of the rotation flux vector and in the case of the integrated controller by the square of the weighting factor, where the weighting factor has a maximum value of 1.

4,282,474

LIFE-PROLONGING DEVICE FOR HEARING-AID BATTERIES

Andrew Wyzenbeek, Chicago, Ill., assignor to Laura May Usher, Cincinnati, Ohio

Filed Nov. 19, 1979, Ser. No. 95,607
Int. Cl.[3] H02J *7/00;* **H01M** *10/46*
U.S. Cl. 320—2 **5 Claims**



1. A life-prolonging device for ear level hearing aids and the like comprising:

a box-type housing having a lid hingedly mounted thereto, said lid having an actuating switch means;

a platform equipped with restoring battery means removably mounted in said housing, said restoring battery means having a positive and a negative end, said platform being further equipped with means for mounting a hearing aid battery for depolarizing the same;

an electrical circuit mounted on said platform having a first current flow circuit portion adapted to deliver electrical current to the negative end of said restoring battery means from the negative end of said hearing aid battery, a second current flow portion for delivering electrical current to the positive end of said hearing aid battery, a third current flow portion for receiving electrical current from the positive end of said restoring battery means, said second and third circuit portions being connectable through said actuating switch means when said box lid is in the closed position.

4,282,475

AUTOMOTIVE CHARGER SYSTEM

Russell E. Milton, 712 E. 4th St., Alturas, Calif. 96101

Filed Dec. 20, 1978, Ser. No. 971,489
Int. Cl.[3] H02J *7/00*
U.S. Cl. 320—6 **6 Claims**

1. A motor vehicle battery charger circuit energized from an alternating current power source, said charger circuit comprising,

means for converting the current from said alternating power source to a direct current, said means having an alternating current input side and a direct current output side,

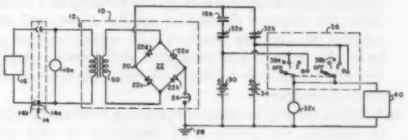
a tension releasable electrical connector electrically connecting said means for converting said alternating current to said alternating current power source,

a first battery,

a vehicle electrical system,

means for connecting said battery to said vehicle electrical system and disconnecting said battery from said vehicle electrical system,

means for connecting said direct current side of said means for converting said alternating current to said battery when said means for converting is connected to said alternating current power source and when said vehicle electrical system is disconnected from said battery, and



means for disconnecting said battery from said means for converting when said battery is connected to said vehicle electrical system, said means comprising

a first relay having an actuating coil and a set of normally closed contacts, said actuating coil connected in parallel with said vehicle electrical system and in series with said means for disconnecting said battery from said vehicle electrical system,

said normally closed contacts being connected in series between said battery and said direct current output side of said means for converting said alternating current,

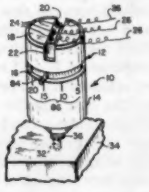
said motor vehicle battery charging circuit being attached to and carried on said vehicle.

4,282,476

VARIABLE PRESSURE CONTROL SWITCH FOR BATTERY CHARGING CIRCUIT

James Frezzolini, and James J. Crawford, both of Ringwood, N.J., assignors to Frezzolini Electronics, Inc., Hawthorne, N.J.

Filed Mar. 16, 1979, Ser. No. 21,216
Int. Cl.[3] H02J *7/04;* **H01H** *35/40*
U.S. Cl. 320—46 **5 Claims**



1. A variable pressure control switch for a battery charging circuit comprising, in combination:

a housing;

a first member in said housing;

a chamber in said first member;

a diaphragm extending across said chamber and dividing said chamber into first and second portions;

a first passage communicating with said chamber first portion and extending through said first member and adapted to connect with the interior of the battery to be charged whereby the interior pressure of the battery is applied to said diaphragm;

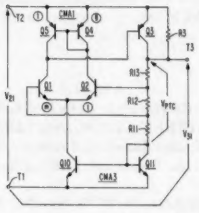
a second passage in said first member communicating with said chamber second portion;
a piston slidably received in said second passage;
said piston being movable by said diaphragm from a first to a second position;
variable force biasing means engaging said piston for preventing movement of said piston to said second position until a preset pressure has been exceeded;
and switch means operable by said piston when said piston is moved to said second position to control the associated charging circuit;
an elongated slot in said housing;
said biasing means comprising a spring having one end engagement with said piston head, and a second axially movable member engaging the other end of said spring to selectively compress said spring;
said second member comprising a projection extending through said elongated slot in said housing and accessible from the exterior thereof to axially move said second member to vary the force of said spring on said piston head, the ends of said elongated slot forming abutments for said projection to limit the axial movement of said second member;
and indicia on said housing cooperating with said projection to indicate the pressure of operation of said control switch.

4,282,477

SERIES VOLTAGE REGULATORS FOR DEVELOPING TEMPERATURE-COMPENSATED VOLTAGES

Adel A. A. Ahmed, Clinton Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,471
Int. Cl.[3] G05F *3/04*
U.S. Cl. 323—312 **14 Claims**



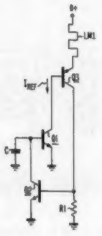
1. A series voltage regulator for responding to an unregulated voltage received between first and second terminals for supplying regulated voltage between said first terminal and a third terminal which regulated voltage is compensated against variations in a temperature T, said regulator comprising:
first and second transistors of a first conductivity type each having respective base, emitter and collector electrodes, exhibiting a logarithmic collector current response to its emitter-to-base voltage, and being arranged for operation at a respective temperature substantially equal to T;
a third, series regulator transistor, having the ends of a principal current conduction path thereof defined by first and second electrodes respectively connected to said second terminal and to said third terminal, and having a third control electrode, the potential between which and one of its said first and second electrodes controls the conductivity of its principal current conduction path between its first and second electrodes;
a potential divider network comprising a series connection of resistive means and of forward-poled semiconductor junction means between said first terminal and a point of connection to which at least a portion of the potential at said third terminal is applied;
means for applying potential developed across resistive means in said potential divider network in fixed portion between the base electrodes of said first and second transistors;
means for providing a path for current of predetermined value between said first terminal and an interconnection between the emitter electrodes of said first and second transistors; and
means for differentially combining in fixed proportions currents received from the collector electrodes of said first and second transistor to develop and error signal applied to the third electrode of said series regulator transistor.

4,282,478

REFERENCE CURRENT SUPPLY CIRCUITS

Arthur J. Leidich, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 948,104, Oct. 3, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,848
Int. Cl.[3] G05F *1/56*
U.S. Cl. 323—316 **9 Claims**

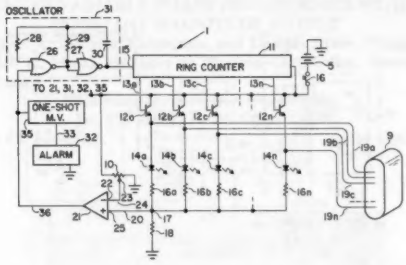


1. In a current supply having
a first transistor of a first conductivity type, having emitter-base and collector-base junctions and having emitter and collector and base electrodes;
means for applying an operating potential between the emitter and collector electrodes of said first transistor to cause leakage current across its collector-base junction;
means arranging the emitter-base junction of said first transistor to be forward-biased by base current quintessentially derived solely from said leakage current, for conditioning said first transistor to conduct a reference current between its collector and emitter electrodes; and
means for applying said reference current to utilization means
an improvement for preventing said reference current for undesirably exceeding a prescribed value comprising:
threshold detector means having an input circuit; and having an output circuit connected for shunting a portion of said leakage current away from the emitter-base junction of said first transistor responsive to its input circuit having applied thereto an input voltage exceeding a prescribed threshold value; and
current-to-voltage converter means having an input circuit connected to receive said reference current, having an output circuit connected to the input circuit of said threshold detector means for supplying input voltage thereto, and providing a current-to-voltage conversion between its input and output circuits such that said threshold value of input voltage to said threshold detector means is reached at said prescribed value of reference current.

4,282,479
TEST APPARATUS FOR LOCATING SHORTS DURING ASSEMBLY OF ELECTRICAL BUSES

Gordon J. Deboo, Sunnyvale, and David J. Devine, San Jose, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 24, 1979, Ser. No. 69,485
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **3 Claims**



1. Test apparatus for locating shorts between electrical buses in a bus system having n buses, said apparatus comprising:

means for generating pulses at a predetermined rate;

means having n outputs and an input coupled to said pulse generating means for sequentially emitting pulses at said n outputs at said predetermined rate;

a resistor having first and second terminals, said first terminal being grounded;

n indicator circuits each including an electric lamp coupled between said resistor second terminal and a different output of said pulse emitting means, said output pulses from said pulse emitting means causing said lamps to be sequentially energized at said predetermined rate and a maximum voltage V to be produced across said resistor when no buses are shorted together;

a single conductor linking each indicator circuit lamp to a different bus;

a comparator having first and second inputs and an output, said first input being connected to said second terminal of said resistor;

means for producing a fixed voltage slightly greater than V and applying it to said second input of said comparator;

a sonic alarm;

means coupled to said output of said comparator for turning on said alarm for a predetermined period and switching off said means for generating pulses when said voltage at said first comparator input exceeds said voltage at said second comparator input;

a short condition between two of said buses causing: said voltage across said resistor to exceed said voltage applied to said second comparator input; said means for generating pulses to stop generating pulses; and said electric lamps associated with said shorted buses to remain illuminated until said short condition is removed.

4,282,480
APPARATUS FOR HUMIDITY DETECTION

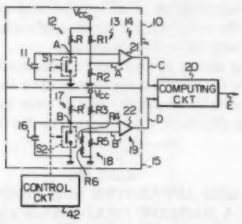
Katsuyuki Fujito; Seiro Hasegawa; Takehiko Unoguchi; Atsushi Nishino, and Akihiko Yoshida, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 1, 1979, Ser. No. 35,331
Claims priority, application Japan, May 2, 1978, 53-53152; Jul. 17, 1978, 53-87443
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **27 Claims**

1. A humidity sensor comprising:

(a) a first pulse generating circuit including a humidity sensing element, an electrostatic capacitance of which varies in accordance with the ambient humidity, for producing a first pulse, the width of which indicates the capacitance of said sensing element, said first pulse generating circuit including a first charging-discharging circuit connected to said sensing element for charging said sensing element via a resistor, a reference voltage generating circuit, and a comparator responsive to the voltage across said sensing element and to said reference voltage;

(b) a second pulse generating circuit including a fixed capacitor for producing a second pulse, the width of which



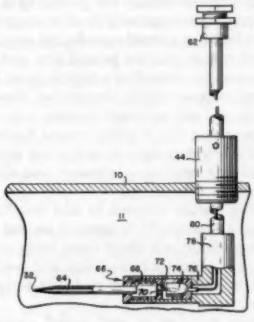
indicates the capacitance of said fixed capacitor, said second pulse generating circuit including a second charging-discharging circuit connected to said fixed capacitor for charging said fixed capacitor, a variable reference voltage generating circuit for producing a reference voltage variable in accordance with the ambient temperature, and a comparator responsive to the voltage across said fixed capacitor and to said variable reference voltage; and

(c) a computing circuit responsive to said first and second pulses for producing a third pulse by detecting the difference between the widths of said first and second pulses.

4,282,481
APPARATUS FOR MEASURING THE LOCAL VOID FRACTION IN A FLOWING LIQUID CONTAINING A GAS

Patrick F. Dunn, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 17, 1979, Ser. No. 58,339
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 P **10 Claims**



1. An apparatus for measuring a local void fraction in an electrically-conducting flowing liquid containing a gas, the apparatus comprising:

an impedance-variation probe having a conducting tip disposed in the flowing liquid;

means connected electrically to the probe and the flowing

liquid for applying a controlled first electrical parameter to the probe;

probe energization means disposed within said probe including an electrically conductive shield and circuit means for applying a first electrical parameter to the probe, and for applying an electrical signal to said shield;

a feedback amplifier connected electrically to the probe and the flowing liquid to respond to a second electrical parameter, said feedback amplifier providing an output signal comprising a first series of signals corresponding to the presence of the fluid at said conducting tip of said probe and a second series of signals interspersed with said first series of signals, corresponding to the presence of voids at said conducting tip of said probe, said output signal maintaining the relative time duration of each signal of said first and second series of signals; and

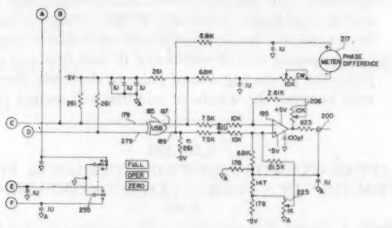
integrating means connected to said feedback amplifier to generate therefrom a time integral of the output signal of said feedback amplifier, which time integral is proportional to the local void fraction in the flowing liquid.

4,282,482

METHOD AND APPARATUS FOR PHASE DETECTION HAVING A NARROW DEAD BAND AND A LINEAR OUTPUT

Michael C. Fischer, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 18, 1979, Ser. No. 49,539
Int. Cl.³ G01R *25/00*
U.S. Cl. 324—83 A **3 Claims**



1. Phase detection apparatus comprising:

first input channel means for providing a first logic signal in response to transitions of a first input signal above and below a first preselected amplitude level;

second input channel means for providing a second logic signal in response to transitions of a second input signal above and below a second preselected amplitude level;

digital circuit means coupled to said first and second input channel means for providing a digital signal having a duty cycle which corresponds to the relative phase relationship of said first and second input signals, said digital circuit means comprising first flip-flop means having a first data input, and a first data output; said clock input being coupled to said first input signal channel, said data input being coupled to said data output;

second flip-flop means coupled to said first flip-flop means and having a second clock input, a second data input, a second data output, said clock input being coupled to said second input channel for receiving said second logic signal, said data input coupled to said data output of said first flip-flop means;

filtering means coupled to said digital circuit means for providing a direct current (DC) output signal having an amplitude corresponding to said phase relationship of said first and second input signals in response to said digital signal; and

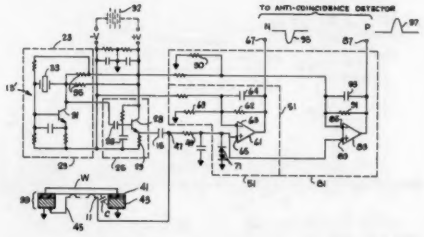
meter means for providing an indication of the relative phase of said first and second input signals in response to said DC output signal.

4,282,483

PROBE FOR DETERMINING P OR N-TYPE CONDUCTIVITY OF SEMICONDUCTOR MATERIAL

George J. Kren, Los Altos; Karel Urbanek, Atherton, and William R. Wheeler, Saratoga, all of Calif., assignors to Tencor Instruments, Mountain View, Calif.

Continuation-in-part of Ser. No. 39,303, May 15, 1979, which is a continuation-in-part of Ser. No. 941,233, Sep. 11, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,272
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 R **26 Claims**



1. An apparatus for determining the p or n-type conductivity of semiconductor material comprising:

a conductive wire disposed to contact a semiconductor material having a p or n-type conductivity characteristic for forming a diode therewith, said wire electrically coupled to a radio frequency oscillator through a capacitor in a manner such that radio frequency electrical energy is delivered to said wire from the oscillator,

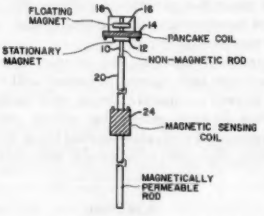
and a dielectric covered conductor means supporting said semiconductor material for completing an electrical path for said radio frequency electrical energy, said capacitor having charge direction sensing means connected thereto for sensing the polarity of said diode whereby the p or n-type of semiconductor material may be determined.

4,282,484

COMBINATION SEISMIC/MAGNETIC TRANSDUCER WITH FLOATING MAGNET

Robert D. Morrow, Baltimore, Md., assignor to Catalyst Research Corporation, Baltimore, Md.

Filed Apr. 30, 1979, Ser. No. 34,326
Int. Cl.³ G01R *33/038*; G01H *11/00*; H04R *11/00*
U.S. Cl. 324—207 **5 Claims**



1. A combination seismic/magnetic transducer comprising a first coil, a first fixed permanent magnet on one side of said coil and having north and south poles aligned with the axis of the coil, a floating permanent magnet on the other side of said coil and also having north and south poles aligned with the axis of the coil, said magents having like poles facing each other whereby seismic disturbances will cause said floating magnet to move relative to said fixed magnet to induce an EMF in said first coi, means for guiding said floating magnet for movement

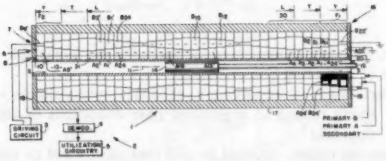
toward and away from said first coil, a rod of magnetically-permeable material connected through an insulator to said fixed magnet and said first coil, and a second coil surrounding said magnetically-permeable rod whereby a second EMF will be induced in said second coil when a magnetically-permeable body is in motion adjacent said rod.

4,282,485

LINEAR VARIABLE PHASE TRANSFORMER WITH CONSTANT MAGNITUDE OUTPUT

Michael A. Pauwels, Kalamazoo, and Dan O. Bauer, Portage, both of Mich., assignors to Pneumo Corporation, Boston, Mass.

Filed May 22, 1978, Ser. No. 907,932
Int. Cl.³ G01R *33/00*; G01B *7/00*
U.S. Cl. 324—208 **19 Claims**



1. A displacement to phase transducer, comprising plural primary means for producing in response to alternating current excitation alternating magnetic fluxes, combining means for producing an output flux having a phase dependent on the relative positions of said combining means and said primary means, at least one of said combining means and primary means being movable relative to the other, and output means for producing an output AC electrical signal having a substantially constant magnitude and a phase corresponding to the phase of said output flux, and wherein each primary means includes plural axially displaced, coaxial segments and segments of one primary means overlap respective segments of a second primary means.

4,282,486

DUAL FOCUSED RESISTIVITY LOGGING METHOD AND APPARATUS WITH DYNAMIC RANGE REDUCTION

Richard B. Culver, Houston, and Francis X. Bostick, Austin, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

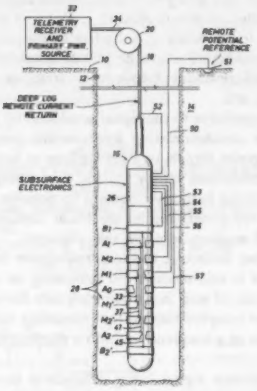
Filed Dec. 4, 1978, Ser. No. 966,292
Int. Cl.³ G01V *3/24*
U.S. Cl. 324—371 **8 Claims**

1. A method for reducing the dynamic range of induced voltages and currents measured in an earth formation by a logging instrument traversing a borehole therethrough and which induced voltage and currents vary directly as the resistivity of the earth formation surrounding the borehole varies, with the measured voltages and currents thereafter utilized in deriving ratios for determining the apparent resistivity of the earth formations surrounding the borehole, comprising the steps of:

generating first and second excitation currents at first and second frequencies, f_1 and f_2, respectively;

measuring the induced formation voltages and currents; and

controlling the magnitude of said generated first and second excitation currents producing said earth formation voltages and currents in response to a linear combination of one of said measured earth formation voltages or currents with first and second reference voltages, such that variations in said earth formation voltages and currents resulting from said variations in the resistivity of the earth


TELEMETRY RECEIVER AND PRIMARY EMF SOURCE
REMOTE POTENTIAL REFERENCE
DEEP LOG REMOTE CURRENT RETURN
SUBSURFACE ELECTRONICS

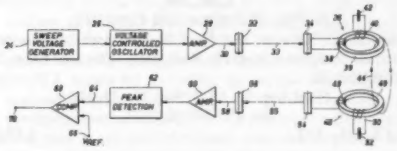
formation effect a reduction in the dynamic measurement ranges of said earth formation voltages and currents.

4,282,487

SUBSEA HYDROCARBON SENSOR SYSTEM

Walter B. Warren, Seabrook, and Ronald J. Marosko, Houston, both of Tex., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 26, 1979, Ser. No. 78,944
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—445 **17 Claims**



1. In a subsea hydrocarbon production installation which includes at least first and second production tree assemblies spaced apart on the sea floor, at least one electro-hydraulic control module located at the sea floor at a substantial distance from at least said first tree assembly, and a plurality of elongated cables extending from said module to at least said first tree assembly for conducting tree-assembly condition indicative signals from said first tree assembly to said control module and other signals from said module to said first tree assembly and in which said cables are coupled to said control module by means of magnetic coupling devices which permit physical removal of said module from the sea floor without exposing current carrying conductors to the sea-water environment, a hydrocarbon-leak detecting and reporting subsystem comprising:

means contained within said control module for providing a frequency-modulated interrogation signal with the frequency of said signal varying as a function of time over a preselected frequency range;

means comprising at least one of said cables and at least one of said magnetic coupling devices for conducting said signal to said first tree assembly;

hydrocarbon-presence-responsive sensor means, located adjacent a portion of the hydrocarbon-containing equipment of said first tree assembly, for transmitting and attenuating said signal as a predetermined function of the amount of hydrocarbon compounds in an environmental medium adjacent said sensor means;

means comprising at least one of said cables and one of said magnetic coupling devices for conducting said attenuated signal to the interior of said control module;

a peak detector in said module responsive to said attenuated signal for producing a hydrocarbon-presence-indicative electrical signal whose amplitude is substantially independent of resonant frequency variations of said sensor means; and

means responsive to the signal produced by said peak detector for communicating hydrocarbon-presence-indicative intelligence signals to a sea-surface or land-based facility.

6. A hydrocarbon sensor system, comprising:

a transmitting inductive element responsive to an excitation signal for generating an electrical current in an environmental medium adjacent said element;

a receiving inductive element responsive to said electrical current in said medium for providing an output signal;

at least one of said inductive elements having a capacitive element coupled thereto for resonating said one inductive element at a frequency within a predetermined frequency range;

said excitation signal being frequency modulated over a frequency range substantially corresponding to said predetermined range, and

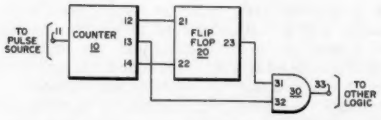
means for monitoring said output signal to indicate the presence of hydrocarbons in the vicinity of said inductive elements.

4,282,488

NOISE ELIMINATOR CIRCUIT

Stanley R. C. Norman, and Kam B. Tin, both of Brockville, Canada, assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Sep. 17, 1979, Ser. No. 76,042
Int. Cl.³ H03K *5/22*
U.S. Cl. 328—112 **4 Claims**



1. A noise eliminator circuit for use in a decoding circuit including a counter with at least first, second and third outputs, said counter operated in response to an external pulse source to generate at said first, second and third outputs respectively a first pulse train having a pulse width of a first characteristic, a second pulse train having a pulse width of a second characteristic and being greater than said first pulse train characteristic, and a third pulse train having a pulse width of a third characteristic and being greater than said second pulse train characteristic, and a gate circuit including first and second inputs connected to said second and third counter outputs, and an output, operated in response to coincident pulses from said second and third pulse trains to generate a gate signal at said output:

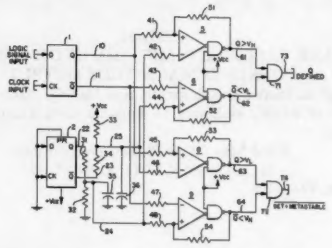
the improvement comprising the inclusion of a delay circuit connected between said third output and said gate circuit and including an input connected to said first counter output, operated in response to said first pulse train to delay said third pulse train by said pulse width of said first pulse train.

4,282,489

METASTABLE DETECTOR

William T. DeRienzo, Pompano Beach, Fla., assignor to Harris Data Communications Inc., Dallas, Tex.

Filed May 14, 1979, Ser. No. 38,425
Int. Cl.³ H03K *5/153, 5/24, 19/003*
U.S. Cl. 328—206 **14 Claims**



1. A circuit arrangement for detecting the metastable condition of a flip-flop comprising:

first means for supplying a set of reference voltages respectively related to prescribed state conditions of said flip-flop; and

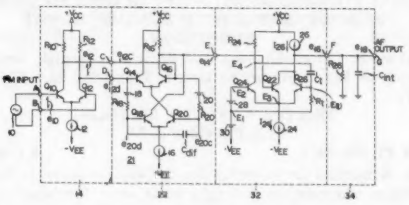
second means, coupled to said first means and to said flip-flop, for comparing the respective Q and Q outputs of said flip-flop with said set of reference voltages and generating a first prescribed logical output during the period of time that said flip-flop is in a metastable condition and thereafter generating a second prescribed logical output upon the termination of said metastable condition and the return of said flip-flop to one of its bistable conditions.

4,282,490

PULSE COUNT TYPE FM DEMODULATOR CIRCUIT

Hiromi Kusakabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 24, 1979, Ser. No. 6,243
Claims priority, application Japan, Jan. 27, 1978, 53/8099
Int. Cl.³ H03D *3/00;* H03K *9/06*
U.S. Cl. 329—103 **12 Claims**



1. A demodulator circuit comprising:

a limiter circuit for providing a first signal corresponding only to the frequency component of an input signal,

a differentiation circuit for providing a trigger pulse synchronized with said first signal,

a vibrator circuit triggered by said trigger pulse for providing a second signal the duty of which is varied in accordance with the frequency of said trigger pulse, and

an integration circuit for providing an output signal having a level corresponding to the duty of said second signal;

said differentiation circuit including an AND gate circuit and a delay circuit;

said first signal being applied to a first input terminal of said AND gate circuit and to said delay circuit;

a second input terminal of said AND gate circuit being supplied with a third signal from said delay circuit; and

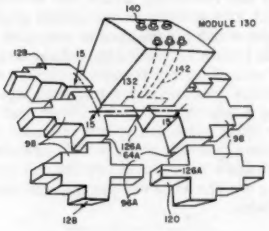
said AND gate circuit providing said trigger pulse by detecting the logical sum of a first logic level of said first signal and a second logic level corresponding to the logic level of said third signal.

4,282,491

AMPLIFIER WITH SEVERED TRANSMISSION LINES

George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 13, 1979, Ser. No. 103,312
Int. Cl.³ H03F 3/60
U.S. Cl. 330—286 **11 Claims**



1. A system for processing radiant energy comprising:

a set of parallel bars, said bars being spaced apart to provided passages therebetween, said bars being configured to provide a pair of opposed parallel sides to each of said passages to admit the propagation of radiation along said passages;

means for coupling radiation to said passage, said coupling means being adapted for alternating the sense of a transverse field of said radiation between adjacent ones of said passages; and wherein

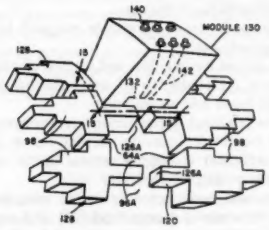
said bars are severed to provide isolation between terminals of an electrical circuit coupled to said bars.

4,282,492

MODULAR MULTIPLE CHANNEL SIGNAL PROCESSOR

George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 13, 1979, Ser. No. 103,029
Int. Cl.³ H03F 3/60
U.S. Cl. 330—286 **4 Claims**



1. A system for processing radiant energy comprising:

a set of longitudinal members positioned along a cylindrical surface and having side walls directed normally to said surface, opposed walls of neighboring ones of said members defining parallel-walled transmission lines, said members having depressions in their opposed walls to provide enlargements of said waveguides; and

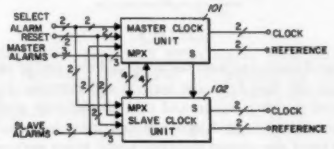
insertable modules having amplifying elements on opposite sides thereof, said modules being inserted in said enlargements, said modules having sidewalls which, in combination with the opposed sidewalls of said depressions, produce a transmission line structure for guiding radiant energy to said amplifying elements.

4,282,493

REDUNDANT CLOCK SIGNAL GENERATING CIRCUITRY

Deborah L. Moreau, Barrington, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1979, Ser. No. 54,068
Int. Cl.³ H03L 7/00
U.S. Cl. 331—2 **17 Claims**



1. Circuitry for redundantly generating a clock signal having a predetermined nominal frequency, said circuitry comprising:

first phase-locked loop (PLL) means for providing a first clock signal that is phase lockable to a second clock signal in response to a predetermined first state of a control signal and that free runs at the predetermined nominal frequency in response to a predetermined second state of the control signal;

second PLL means coupled to the first PLL means for phase locking to the first clock signal and providing an out-of-lock indication signal when the second PLL means is not phase locked to the first clock signal;

third PLL means for providing the second clock signal that is phase lockable to the first clock signal in response to the predetermined second state of the control signal and that free runs at the predetermined nominal frequency in response to the predetermined first state of the control signal;

fourth PLL means coupled to the third PLL means for phase locking to the second clock signal and providing an out-of-lock indication signal when the fourth PLL means is not phase locked to the second clock signal; and

control means for providing the control signal having a predetermined first state in response to the out-of-lock indication signal from the second PLL means and providing the control signal having a predetermined second state in response to the out-of-lock indication signal from the fourth PLL means.

4,282,494

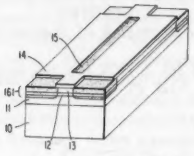
STRIPE-GEOMETRY DOUBLE HETEROJUNCTION LASER ELEMENT

Hiroo Yonezu, and Masayasu Ueno, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1979, Ser. No. 15,839
Claims priority, application Japan, Feb. 28, 1978, 53-23115
Int. Cl.³ H01S 3/19
U.S. Cl. 331—94.5 H **6 Claims**

1. A semiconductor laser comprising a semiconductor crystal having a pair of principal surfaces, a first, second, third and fourth side surfaces, said first and second side surfaces being optically reflective and constituting an optical resonator, said third and fourth side surfaces respectively crossing with said first and second side surfaces and being opposing to each other, and a pair of electrodes, said semiconductor crystal including

an active layer bounded by a pair of heterojunction interfaces and said first and second side surfaces, said active layer having an elongated exciting region between said first and second side surfaces in a stripe-geometry, one and the other ends of said exciting region being spaced apart from said first and second side surfaces, respectively, said pair of electrodes being provided on said pair of principal surfaces so as to supply injection current to said exciting region via said heterojunction interfaces to emit a light, said active layer further having non-exciting regions locating at least between said one end of said exciting region and said first side surface and between said other end of said exciting region and said second side surface and being transparent to said light emitted from said exciting region, the band gap of said exciting region being narrower than that of said non-exciting region, said crystal further including optical obstacles located at least between said non-exciting regions and said third side surface and between said non-exciting regions and said fourth side surface.

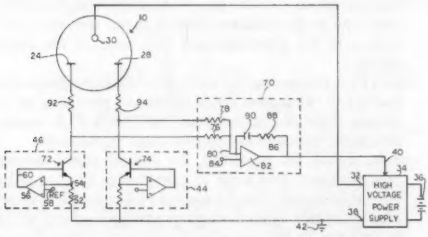


4,282,495

HIGH EFFICIENCY CURRENT REGULATOR FOR RING LASER GYROSCOPE

Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed May 29, 1979, Ser. No. 43,585
Int. Cl.³ H01S *3/083*
U.S. Cl. 331—94.5 S **2 Claims**



1. Control circuitry for a gas lasing system for a ring laser gyro having a cathode and having first and second anodes for providing the plasma or glow discharge, said control circuitry being adapted for controlling and maintaining the current of each said anode at a selected level and for reducing the power required to be dissipated by said circuitry comprising:

a power supply having first and second output means for providing an output voltage which voltage varies in response to a variable input reference voltage applied to a reference input port of said power supply, said first output means being connected to said lasing system cathode;

first and second current regulating circuits connected between said first and second lasing system anodes respectively and said second output means of said power supply, each said current regulating circuit being arranged for maintaining the current through its said anode at a selected level in response to an input reference voltage which reference voltage itself in turn varies in response to the anode current level; and

a feedback loop connected between said first and second current regulating circuits and said power supply variable reference voltage input port for varying the output voltage of said power supply second output means in response to the voltage drop across said first and second regulating circuits whereby the voltage across said first and second current regulating circuits is maintained at a selected level, wherein

said first and second current regulating circuits each comprises an anode resistor having one end connected to its said anode, a transistor connected between the other end of said anode resistor and second output means, and a controlling means, said controlling means being connected to said transistor such that said transistor controls said anode current in response to a control voltage received by said controlling means, and wherein

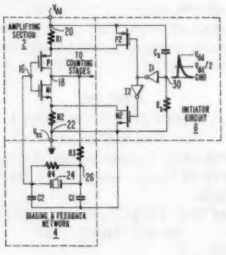
said feedback loop includes an operational amplifier having a first input which is connected to said other end of each said anode resistor for sensing the voltage level across said first and second current regulating circuits, and wherein said feedback loop includes a reference input means for providing a selected reference voltage, said operational amplifier being connected to said reference input means for providing a variable output which varies in response to changes in said voltage across said first and second current regulating circuits when compared to said selected reference voltage.

4,282,496

STARTING CIRCUIT FOR LOW POWER OSCILLATOR CIRCUIT

Robert C. Heuner, Bound Brook, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,703
Int. Cl.³ H03B *5/06, 5/36*
U.S. Cl. 331—116 FE **9 Claims**



1. The combination comprising:

first and second power terminals adapted to receive an operating potential;

amplifying means having first and second electrodes for the application therebetween of an operating potential and having an input and an output;

regenerative feedback means connected between said input and said output for causing oscillations to be produced when a sufficient voltage is present across said first and second electrodes;

impedance means connected in series with said first and second electrodes between said first and second power terminals;

switching means connected across said impedance means for providing a low impedance conduction path in parallel with said impedance means, when turned on; and

means responsive to the application of an operating potential across said first and second power terminals, said means including a differentiating circuit coupled across said first

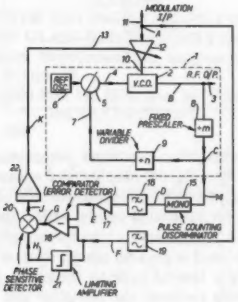
and second power terminals for producing a relatively narrow pulse each time said operating potential is applied across said first and second power terminals, and means responsive to said relatively narrow pulse coupled to said switching means for turning on said switching means momentarily each time an operating potential is applied across said first and second terminals.

4,282,497

FREQUENCY MODULATOR HAVING LINEARIZED OPERATION

Anthony P. Hulbert, Southampton, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jul. 5, 1979, Ser. No. 54,920
Int. Cl.³ H03C 3/08
U.S. Cl. 332—19 **7 Claims**



1. A frequency modulator comprising:

an oscillator having an output frequency which is dependent upon the amplitude of a modulating signal,

modulating signal control means for receiving a modulating signal and for gain-controlling or attenuating said modulating signal so as to provide an output to the oscillator and to produce a corresponding frequency modulation on the output signal from the oscillator,

discriminator means responsive to the frequency modulation for producing a corresponding amplitude varying signal,

comparator means for comparing the amplitude varying signal from the discriminator means with the modulating signal to provide a comparison output,

phase sensitive detector means for receiving said modulating signal and said comparison output, and responsive thereto for performing a phase detection operation so as to provide a control signal, and

integrator means for receiving and integrating said control signal so as to provide an integrated control signal, said integrated control signal being provided to said modulating signal control means so as to control the gain or attenuation provided by the modulation signal control means and so as to maintain constant the amplitude of the amplitude varying signal with respect to the modulating signal, whereby operation of the frequency modulator is linearized.

4,282,498

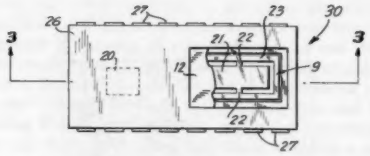
CIRCUIT PACKAGE

Nobutsugu Iizawa, Minowa, Japan, assignor to Matsushima Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Sep. 20, 1979, Ser. No. 77,519
Claims priority, application Japan, Sep. 22, 1978, 53/117137
Int. Cl.³ H03H 9/10, 9/125
U.S. Cl. 333—186 **21 Claims**

1. A circuit package for electronic circuits comprising:

a body, said body having a concave recess formed in a first surface thereof, said recess tapering inwardly in at least one step, said at least one step providing a first peripheral step surface within said body, said first step surface being spaced away from said first body surface; and



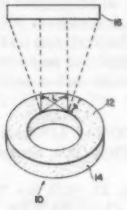
a resonator element, said resonator element including a peripheral frame portion, said peripheral frame portion resting on said first peripheral step surface.

4,282,499

OPTICALLY TUNABLE RESONANT STRUCTURE

Alfred P. DeFonzo, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 24, 1979, Ser. No. 78,266
Int. Cl.³ H01P 7/00
U.S. Cl. 333—231 **23 Claims**



1. A resonator, for supporting electromagnetic oscillations within the frequency range of approximately 10 GHz to 1000 GHz, having resonant properties which are controllable by light from a source of light comprising:

a resonant structure having an interaction material having an optical absorption edge not greater than the wavelength of said light, said material being of a type which forms a plasma of electron-hole pairs when illuminated by said source of light, said plasma having sufficient density to change the reactance and dielectric response of said resonant structure thereby shifting the frequency of said electromagnetic oscillations.

4,282,500

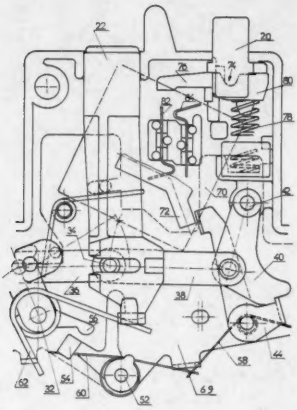
GROUND FAULT CIRCUIT INTERRUPTING DEVICE

Jean-Louis Ducroquet, Eybens, and Michel Lazareth, Grenoble, both of France, assignors to Merlin Gerin, Grenoble, France

Filed Jun. 25, 1979, Ser. No. 51,388
Claims priority, application France, Jul. 3, 1978, 78 20135
Int. Cl.³ H01H 83/02
U.S. Cl. 335—18 **2 Claims**

1. A ground fault circuit interruption device including a circuit breaker module and a ground fault detector module mounted in side-by-side relationship, said circuit breaker module comprising a manual operating handle and an automatic tripping device, said ground fault detector module comprising a differential current transformer, an electromagnetic operator energized by said current transformer and a spring powered operating mechanism including a toggle means formed by first and second links pivotally connected at a knee, a reset push button linked to said knee to reset said toggle means into a

straight position, a latch means cooperating with said first link for maintaining said toggle means in an operating position, a rocker operatively connected to said second link and to said circuit breaker tripping device for opening said circuit breaker



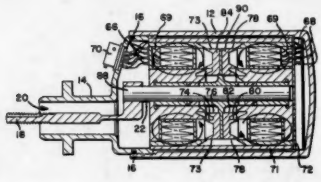
responsive to the releasing of said latch means, a latching means for maintaining said reset push button in a reset position and thereby said toggle means in the straight position, said rocker having means for releasing said latching means of said push button when said rocker actuates said tripping device.

4,282,501

BI-DIRECTIONAL LINEAR ACTUATOR

John L. Myers, Tipp City, Ohio, assignor to Ledex, Inc., Vandalia, Ohio

Filed Aug. 23, 1979, Ser. No. 69,038
Int. Cl.³ H01F *7/08, 7/13*
U.S. Cl. 335—258 **11 Claims**



1. An electromagnetic device, comprising:

stator means comprising a closed flux-carrying path including a core having a plurality of concentric cylindrical pole surfaces and an air gap opening defined between a first outermost pole surface and a second next outermost pole surface, said second pole surface positioned inwardly of said first pole surface, said core having at least one further pole surface positioned inwardly of said second pole surface,

coil means comprising means for generating electromagnetic flux in said closed flux carrying path, the direction of flux flow across said air gap being generally perpendicular to said pole surfaces, and

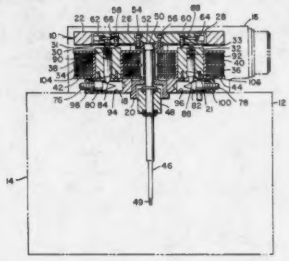
armature means, defining a plurality of concentric cylindrical armature surfaces, mounted to be movable in a direction substantially parallel to said pole surfaces, each of said armature surfaces overlapping a corresponding one of said pole surfaces by an area dependent upon the position of said armature means.

4,282,502

ELECTROMAGNETIC POSITIONER

Robert D. Nicholson, Birmingham, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Feb. 6, 1978, Ser. No. 875,303
The portion of the term of this patent subsequent to Nov. 4, 1997, has been disclaimed.
Int. Cl.³ H01F *5/00, 7/08*
U.S. Cl. 335—266 **10 Claims**



1. An electromagnetic positioner comprising a mounting plate having a top, a flexure tube secured at one end centrally to and extending perpendicularly from the top of the mounting plate, a drive arm supported partly within the flexure tube from the other end of the flexure tube for movement therewith, a top plate positioned in parallel spaced relation to the mounting plate having a central opening therethrough, permanent magnets extending between the top plate and the mounting plate, an armature positioned within the central opening in and in peripheral spaced relation to the top plate secured to the other end of the flexure tube for producing movement of the flexure tube in accordance with electromagnetic forces applied to the armature, a pair of pole pieces secured to the mounting plate on opposite sides of the flexure tube extending from the mounting plate toward the armature and terminated in spaced relation to the armature to provide an active air gap between each of the pole pieces and the armature whereby flux from the permanent magnets enters both pole pieces in the same direction across the air gaps, and control coils positioned around the pole pieces for receiving electrical signals therethrough to provide flux through the active air gaps to reinforce or oppose the flux from the permanent magnets in accordance with the electrical signal passed through the coils whereby the armature is caused to move to stress the flexure tube and provide movement of the drive arm in accordance with the signals received by the control coils.

4,282,503

ELECTROMAGNETIC DEVICE

Masami Shimizu, Tokyo, and Hiroshi Aizawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,801
Claims priority, application Japan, Sep. 7, 1978, 53-109980
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—276 **4 Claims**

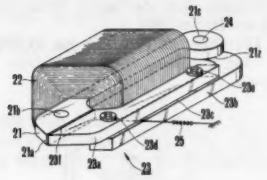
1. An electromagnetic device comprising:

(a) a support shaft;

(b) a yoke havig an adhesion surface and fixedly mounted on said support shaft; and

(c) an armature consisting of a straight-extending first member having an upper surface in contact with the lower surface of said yoke and rotatably mounted on said support shaft and a straight-extending second member,

fixedly mounted on said first member, which can be detached from the first member and having an adhesion



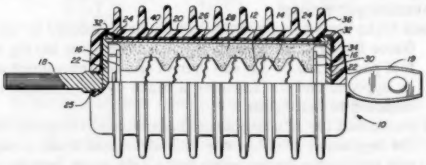
surface provided at the free end thereof in a position opposite to said adhesion surface.

4,282,504

FAULT LIMITER HAVING A ONE-PIECE ENCLOSURE OF GLASS-REINFORCED RESIN

Thomas J. Tobin, Northbrook, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Sep. 10, 1979, Ser. No. 73,667
Int. Cl.³ H01H *85/20*
U.S. Cl. 337—186 **12 Claims**



1. An improved housing for a high-voltage device, the device being of the type wherein high pressures may be generated within the housing during operation of the device, wherein the improved housing comprises:

a reinforcing layer surrounding internal elements of the device, the reinforcing layer having high tensile strength and interstital spaces; and

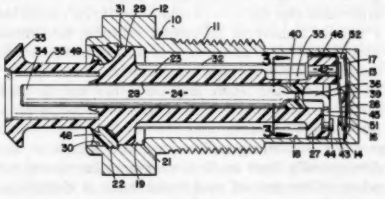
a molded, flexible enclosure formed around and impregnating the interstices of the reinforcing layer, high pressures generated by operation of the device deforming the enclosure to load the reinforcing layer in tension.

4,282,505

FAN COOLANT THERMOSTATS

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed May 29, 1979, Ser. No. 43,307
Int. Cl.³ H01H *37/54*
U.S. Cl. 337—365 **9 Claims**



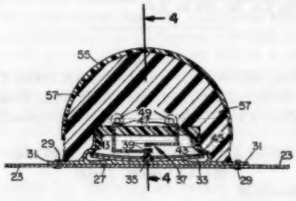
1. A thermostat comprising a tubular heavy walled metallic housing closed at its inner end by an end wall providing a disc seat, said housing providing a cylindrical inner wall, a bimetal snap disc in said seat movable with snap action between two positions in response to two predetermined temperatures, a switch body assembly including a body formed of electrically nonconductive material positioned material positioned within said housing and providing a rim engaging said inner wall with an interference fit, said housing being sufficiently thick to prevent any material enlargement thereof by said interference fit, a switch on said body assembly including at least one terminal extending through said body to provide an external terminal portion and a pair of contacts movable into and out of engagement in response to snap movement of said disc, an internal recess formed in said housing on the side of said interference fit remote from said disc, and potting material sealing with said housing and body and extending into said recess providing a mechanical interlock preventing movement between said body and housing, said switch including a cantilever arm mounted at one end on said switch body assembly and movably supporting one of said contacts at its free end, said terminal providing a lateral projection supporting the other of said contacts against movement, and said body including a recess adjacent to said one end of said cantilever arm and spaced from said rim in the direction toward the end wall providing access for mounting said cantilever arm, said cantilever arm being provided with a projection resiliently biased into contact with said housing to electrically connect said cantilever arm to said housing.

4,282,506

DEVICE FOR SENSING OVERHEATING OF BEARINGS

Jesse D. Satterlee, 1021 S. Oak St., Hillsboro, Ill. 62049

Continuation-in-part of Ser. No. 846,328, Oct. 28, 1977, abandoned. This application Jun. 18, 1979, Ser. No. 49,215
Int. Cl.³ H01H *37/04, 37/52*
U.S. Cl. 337—380 **4 Claims**



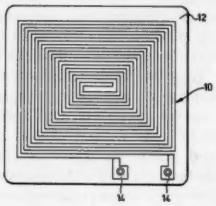
1. A device for sensing overheating of a bearing assemblage having a heat-dissipating surface, said device comprising: a large-area heat-transfer lamina made of a pliably deformable and very-high-heat-conductive high-copper alloy and adapted for attachment in intimate shape-conforming face-contact with and to said heat-dissipating surface of said bearing assemblage, a normally downwardly convex snap-acting bimetallic-disc thermostat, means positioning said thermostat in good heat-transfer relation to said heat-transfer lamina, and a normally open electric switch means positioned for circuit-closing by said thermostat when it snaps to its upwardly convex circuit-closing position in response to its being heated to a preselected potentially bearing-damaging temperature, said means for positioning said thermostat being a thin round cup-shaped metallic element U-shaped in axial cross-section and having at least one disc-edge-embracing groove therein close to and parallel to the bight portion of said metallic element, said thin metallic element having an integral coplanar flange surrounding said bight portion and greatly increasing its area for heat-exchange contact with said heat-transfer lamina, and said heat-transfer lamina having a bearing-surface-engaging area at least double that of said thin metallic element plus its integral coplanar flange.

4,282,507

MEASUREMENT OF TEMPERATURE

Richard F. Tindall, Newcastle; Eric R. Baddeley, Alsager, and Peter W. Rudd, Newcastle, all of England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Sep. 13, 1978, Ser. No. 942,130
Claims priority, application United Kingdom, Sep. 13, 1977, 38125/77
Int. Cl.[3] H01C *7/04*
U.S. Cl. 338—25 9 Claims



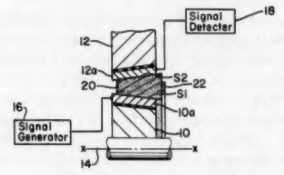
1. A temperature sensitive element for use as part of a resistance thermometer which comprises a substrate made from an electrically non-conducting material and carrying an electrically conducting path comprising a vitreous phase loaded with electrically conducting particles, and a protective coating applied to the conducting path, the protective coating and the vitreous phase each containing a glass in which polyvalent metal ions are absent and which makes said coating and vitreous phase resistant to chemical reduction, the glass in said vitreous phase being one having the formula $RO.Al_2O_3.SiO_2$ where R is at least one of the elements Mg, Ca, Sr, Ba or Zn and the glass in said protective coating being one having the formula $RO.Al_2O_3.B_2O_3.SiO_2$ where R is at least one of the elements Mg, Ca, Sr, Ba or Zn.

4,282,508

ELECTRICAL SIGNAL INTERCONNECTION COUPLER

Bernard D. Raffel, Akron, and John M. Bowyer, Copley, both of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Apr. 28, 1980, Ser. No. 144,754
Int. Cl.[3] B60C *23/00*
U.S. Cl. 340—52 R 8 Claims



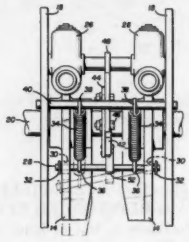
1. A conductor for transmitting an electrical signal from generating means on a rotating member to detecting means on a relatively stationary member across the motion interface between the two members comprises at least one carbon graphite ring having an annular contact surface in intimate contact with a complimentary and mating annular conductive surface on the rotating member and a second annular surface in intimate contact with a complimentary and mating annular conductive surface on the stationary member said complimentary and mating annular conductive surfaces on the rotating and stationary members being electrically connected to the generating and detecting means respectively and said graphite ring functioning as an electrical interconnection between the two members.

4,282,509

SINGLE BRAKE LIGHT SWITCH FOR DUAL BRAKE PEDALS

Richard A. Newman, West Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Nov. 30, 1979, Ser. No. 99,055
Int. Cl.[3] B60Q *1/44;* H01H *3/14*
U.S. Cl. 340—69 2 Claims



1. In a brake actuating assembly including a frame, a pair of brake arms pivotally secured to said frame, said brake arms being selectively depressed individually or jointly, the improvement comprising:

said brake arms being parallel and pivotally secured to said frame for vertical movement, each brake arm having a foot pad surface on one end thereof and an embossment at its opposite end for actuating a brake cylinder which is mounted to said frame;

a mechanism for actuating brake light means in response to the depression of either one or both of said brake arms, said mechanism for actuating brake light means including a control rod means, said control rod means being mounted to said pivotal brake arms, the longitudinal axis of said control rod means extending along a transverse axis in the space between said brake arms;

switch means supported on said frame adjacent to and spaced from said transversely mounted control rod means, said switch means including an actuator arm which engages said control rod means, said brake light means being actuated in response to the closing of said switch means, means for spring biasing said actuator arm to apply a continuous downward force on said actuator arm thereby keeping said actuator arm in contact with said transverse control rod means;

means for supporting said brake arms and control rod means in a normally raised position whereby the longitudinal axis of said control rod means extends along a first transverse horizontal axis which is substantially perpendicular to the longitudinal axes of said brake arms, said switch means being open when said brake arms are in their raised position, said control rod means being movable vertically downward upon simultaneous depression of both brake arms such that the axis of said control rod means assumes a second transverse horizontal position, said means for supporting said brake arms and control rod means including a pair of coil springs, one end of each coil spring being attached to said frame and the other end of each coil spring being attached to said control rod means adjacent a respective brake arm;

means for permitting said control rod means to be tilted downwardly from its first transverse horizontal position when either one of said brake arms is depressed, said means for permitting said control rod means to be tilted downwardly comprising enlarged openings in said brake arms, said control rod means including opposite ends which are mounted within said enlarged openings in said brake arms; and

said actuator arm being spring biased vertically downward in response to the tilting of said control rod means when

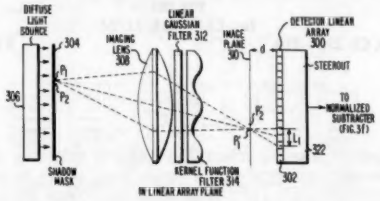
one of said brake arms is depressed or upon the movement of said control rod means to its second horizontal position when both brake arms are depressed simultaneously to thereby close said switch means for actuating said brake light means.

4,282,510

APPARATUS FOR DISCERNING THE NOTICEABLE PRESENCE OF SPATIAL FLUCTUATIONS OF INTENSITY WITHIN A TWO-DIMENSIONAL VISUAL FIELD

Peter D. Southgate, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,244
Int. Cl.³ G06K 9/00
U.S. Cl. 340—146.3 F **19 Claims**



1. In an apparatus comprising signal processing means including detector means for sequentially convolving, with a given kernel function, the intensity values in each of uniformly-spaced segments aligned with a certain dimension of a two-dimensional spatial field of intensities, wherein said field is derived from an illuminated two-dimensional object that is scanned in a certain direction with respect to said detector means, each segment having a given length along said certain dimension that is greater than said uniform spacing and said given kernel function being characterized by (1) having a limited spatial extent along said certain dimension corresponding to said given length, (2) having an integrated value over its limited spatial extent substantially equal to zero and (3) exhibiting a limited spatial frequency passband, and wherein said field may include certain spatial frequencies substantially higher than the upper limit of the limited spatial frequency passband of said given kernel function, the improvement:

wherein said detector means comprises a linear array of contiguous detector elements oriented along given line of a given plane spaced from said object, said given line being in substantially skew relationship with said certain scan direction of said object,

wherein said signal processing means comprises optical processing means including an imaging lens and a linear Gaussian spatial filter oriented substantially perpendicular to said certain dimension of said field for imaging said object on an image plane displaced a selected distance, whereby each detector element is simultaneously illuminated by light originating from an extended linear region of said field, the length of said extended region being determined by the size of said selected distance, said optical processing means as a whole exhibiting a low spatial frequency passband that includes the limited passband of said kernel function but rejects said certain higher spatial frequencies of said field, whereby said certain high spatial frequencies are removed from the illumination of said array of detector elements, and

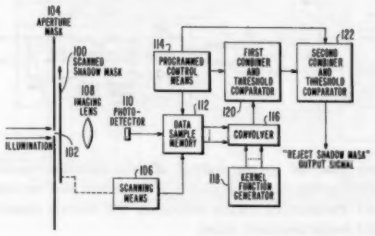
wherein said signal processing means further comprises electronic processing means including steerout means for deriving successive outputs from each of the respective detector elements of said array.

4,282,511

APPARATUS FOR DISCERNING THE NOTICEABLE PRESENCE OF SPATIAL FLUCTUATIONS OF INTENSITY WITHIN A TWO-DIMENSIONAL VISUAL FIELD

Peter D. Southgate, Princeton, N.J., and Horatio N. Crooks, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,243
Int. Cl.³ G06K 9/00
U.S. Cl. 340—146.3 F **22 Claims**



1. Apparatus for discerning, within at least a certain section of a two-dimensional spatial field of intensities, the noticeable presence, along a given field dimension, of intensity variations having spatial frequencies within a predetermined limited spatial frequency band, the given length of said certain section along said given field dimension being equal to more than one wavelength of the lower limit spatial frequency of said limited band; said apparatus comprising:

first means for sequentially convolving said spatial field at each of a plurality of uniformly-spaced intervals along said given field dimension of said certain section with at least one given kernel function, each given kernel function being characterized by (1) having a limited spatial extent along said given field dimension which is substantially smaller than said given length of said given field dimension of said certain section (2) having an integrated value over its limited spatial extent substantially equal to zero and (3) exhibiting a spatial frequency passband no greater than said predetermined limited spatial frequency band, and

second means for deriving an output signal equal to the value of the q'th root of the sum of the q'th power of each of the respective convolutions, and comparing this signal with a predetermined threshold value, where q is a given-valued number and where said predetermined threshold value corresponds to a just-noticeable presence of intensity variations having spatial frequencies within said kernel function spatial frequency band along the length of said given field of said certain section.

4,282,512

DATA COMMUNICATION SYSTEM

David R. Boggs, and Robert M. Metcalfe, both of Palo Alto, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,135
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—147 LP **10 Claims**

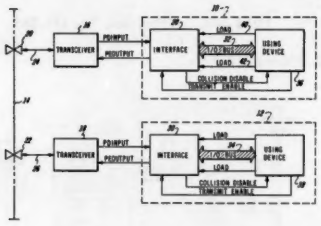
1. A data communication system comprising:

a communicating medium;

a plurality of transceivers connected to said medium, each transceiver including transmitting means for transmitting encoded data onto said medium, and receiving means for receiving encoded data communicated on said medium by another transceiver;

decoder means coupled to the receiving means of each transceiver for decoding data received by said receiving means and applying at its output a decode signal represen-

tative of the character of the received data, said decode signal being at a predetermined value whenever data communicated on said medium by another transceiver is received by said receiving means during the time said transmitting means is transmitting data onto said medium; and



means coupled to the output of said decoder means for interrupting the transmission of data onto said medium by said transmitting means whenever the decode signal is at said predetermined value.

4,282,513

PROCESS AND ARRANGEMENT FOR THE ELECTRONIC CONTROL OF THE INPUT PULSES OF A MANUALLY ROTATABLE PULSE GENERATOR INTO AN ELECTRONIC COUNTER

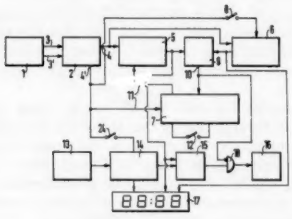
Alfred Meisner, Nuremberg; Hans Grasser, Ekcental, and Peter Glasmacher, Munich, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Oct. 5, 1979, Ser. No. 82,165

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843353

Int. Cl.³ G04C *3/00*; H04Q *9/00*

U.S. Cl. 340—149 R **4 Claims**



1. In a process for the electronic interruption and cancellation of the interruption of input pulses of a manually rotatable pulse generator to an electronic counter to maintain the count stored therein, comprising the steps of:

(a) introducing the pulses of the manually rotatable pulse generator into an electronic circuit arrangement;

(b) detecting the direction of rotation of the pulse generator about its axis from the emitted pulses of the pulse generator, and activating with the emitted pulses the input of an up-down counter in dependence upon the detected direction of rotation;

(c) comparing the count in said counter with a preset count of a further counter in said circuit arrangement;

(d) reading the pulses, upon actuation of the ulse generator and of an input switch coacting with the electronic circuit arrangement into said up-down counter until a coincidence is achieved of the count in said up-down counter with the preset count of the other counter, and maintaining the count of the up-down counter to interrupt the further input of pulses from the pulse generator into the up-down counter ; and

(e) cancelling the interruption of the input pulses into the up-down counter at the coincidence of the count of the up-down counter with the preset count of the further counter, the input switch being opened in the interim.

4,282,514

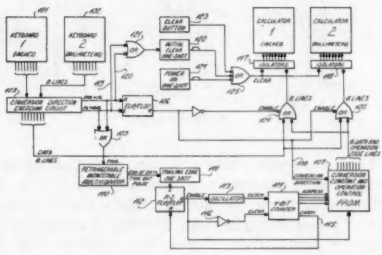
ELECTRONIC CONVERTER

Bernard P. Elkin, 364 Arlington Ave., Brooklyn, N.J. 11208, and John Mickowski, 127 Main St., Franklin, N.J. 07416

Continuation-in-part of Ser. No. 974,211, Dec. 29, 1978, abandoned, which is a continuation of Ser. No. 751,645, Dec. 17, 1976, abandoned. This application Dec. 28, 1979, Ser. No. 108,285

Int. Cl.² H03K *13/24*

U.S. Cl. 235—310 **8 Claims**



1. An electronic converter system for converting numbers from a first to a second numeric system comprising:

A first and second keyboard with each dedicated to a separate one of said numeric systems and adapted to generate digital data representative of each keyboard digit entry;

means for generating a conversion direction signal from each keyboard digit entry, with each direction signal having a logical state corresponding to the selected keyboard through which a digit has been entered;

first and second calculating means responsive to the digital data generated from said first and second keyboard for storing each keyboard digit in a serial fashion;

first and second display means coupled to said first and second calculating means for exhibiting the number defined by the digits stored in said first and second calculating means respectively with said first display means exhibiting the stored number in said first numeric system and with said second display means exhibiting the stored number in said second numeric system;

memory means containing in storage at a first group of predetermined address locations the conversion algorithm instructions for performing a conversion operation of a digit from said first to said second numeric system and containing at a second group of predetermined address locations the conversion algorithm instructions for performing a conversion operation of a digit from said second to said first numeric system;

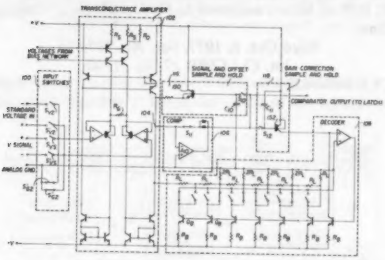
means for accessing information from said first or second group of address locations in said memory means in response to each conversion direction signal; and

means responsive to each conversion direction signal for steering said accessed information from said memory means to the corresponding first or second calculating means for performing a conversion operation on the number stored therein.

4,282,515
ANALOG TO DIGITAL ENCODING SYSTEM WITH AN ENCODER STRUCTURE INCORPORATING INSTRUMENTATION AMPLIFIER, SAMPLE AND HOLD, OFFSET CORRECTION AND GAIN CORRECTION FUNCTIONS

Raymond B. Patterson, III, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 20, 1979, Ser. No. 59,422
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC **6 Claims**



1. In an analog to digital conversion system operating to receive an analog input signal in the form of a differential voltage and convert said input signal into a digital representation thereof, said system performing said conversion over a multi-part cycle by first accomplishing offset correction during the first part of the cycle, converting said differential voltage to a single ended analog signal, sampling said single ended signal and storing said sampled signal during another part of said cycle and subsequently encoding the stored analog signal sample during the final part of the cycle, said system including a transconductance amplifier to convert the differential voltage to a single ended current signal, circuitry for sampling and storing the single ended current signal and circuitry for digitally encoding the stored single ended current signal, the improvement comprising:

an amplifier having at least one input and an output, and feedback means for connecting the amplifier output to said amplifier input, the feedback means including feedback switch means for selectively interrupting the feedback path from the amplifier output to its input, said transconductance amplifier being coupled to said amplifier input,

signal sample and hold means for sampling and storing sampled values of the single ended analog input signal, said signal sample and hold means having an input connected to the output of said amplifier and an output connected to an input of said amplifier,

said signal sample and hold means including sample and hold switch means for selectively interrupting the connection between the output of the amplifier and the input to the signal sample and hold means, and

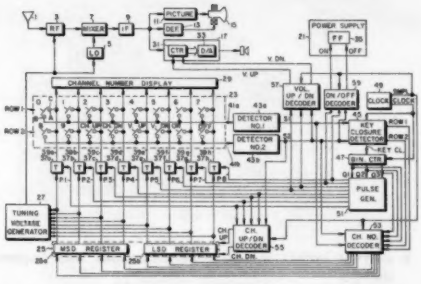
switch drive logic means for controlling the states of said feedback switch means and said sample and hold switch means during each part of the multi-part encoding cycle such that said feedback switch means interrupts the feedback path in said amplifier and said sample and hold switch means completes the connection between the amplifier output and the sample and hold input when said input signal is to be sampled and stored, and such that said feedback switch means completes the feedback path between said amplifier output and input while said sample and hold switch means operates to complete the connection between said amplifier output and sample and hold means input during the encoding portion of the encoding cycle;

whereby said amplifier operates as a transimpedance device during the signal sample and hold operation and as a comparator during the encoding operation.

4,282,516
KEYBOARD ENCODING ARRANGEMENT

Juri Tults, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,311
Int. Cl.³ H04B *1/16;* **G06F** *3/02*
U.S. Cl. 340—365 S **9 Claims**



1. In a system, apparatus comprising:

control means for controlling at least one function of said system;

a plurality of switches for selectively controlling said function;

register means for storing binary signals;

detecting means for generating a sense signal representing the presence and absence of one of said binary signals;

a source of clock signals;

counting means responsive to said sense signal for selectively counting said clock signals and generating count-representative signals;

selective coupling means for selectively coupling said binary signals stored in said register means to respective ones of said plurality of said switches in response to said count-representative signals;

said switches being coupled between said selective coupling means and said detector means for coupling said binary signals coupled to them from said register means by said selective coupling means to said detecting means when said switches are operated; and

decoder means responsive to at least said count-representative signals for generating control signals associated with the operation of respective ones of said switches for said control means to effect the control of said function.

4,282,517
AUTOMATIC RINGBACK FOR DIRECT CURRENT MONITORING SYSTEM

Stanley Wilson, Jr., St. Charles, and Robert M. Borger, Overland, both of Mo., assignors to Potter Electric Signal Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 859,019, Dec. 9, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,357
Int. Cl.³ G08B *23/00*
U.S. Cl. 340—503 **9 Claims**

1. In a monitoring system having a communications line from a central station to remote premises and a source of direct current therefor, the remote premises having selector switch means for producing a plurality of normal current levels in the communications line and signal means of a type which responds to oscillations in the current in the communications line,

central station apparatus comprising

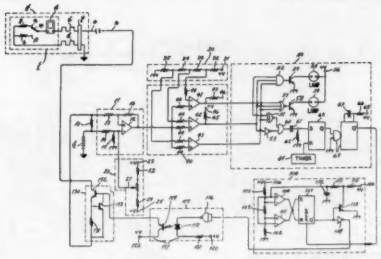
means for sensing the level of the current in the communications line,

means for identifying a change between normal current

levels produced by change of the selector switch means, and

means, responsive to said identification, to provide an alternating interruption of the level of the direct current in the communications line, including

an oscillating voltage source, and



a current limiter in the communications line responsive thereto,

whereby when the current changes from one normal current level to another, said current limiter produces oscillations in the current in the communications line to which said signal means responds.

4,282,518

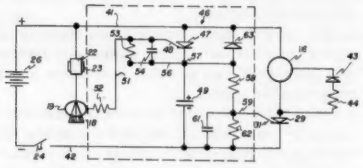
VIBRATION RESPONSIVE DOOR ALARM

Edgar L. Bonner, Rte. 4, Box 101-B, Taylorsville, N.C. 28681

Filed Jul. 9, 1979, Ser. No. 56,132

Int. Cl.[3] G08B *13/08*

U.S. Cl. 340—566 **3 Claims**



1. An alarm device comprising, in combination, a housing, means for attaching said housing to a supporting structure, an audible alarm in said housing, a battery in said housing, an SCR having a gate for connecting said audible alarm to said battery, vibration responsive switch means connected to said SCR gate for activating said SCR when said housing is subjected to vibration to connect said signaling means to said associated source of power for indication by said signaling means of the vibration on said housing, said vibration responsive switch means comprising a pendulum of tapered configuration and a ring assembly, means for supporting said pendulum in said housing within said ring for swinging movement from an inoperative position in spaced-apart relationship with said ring in the absence of vibration on said housing and an operative position in contact making engagement with said ring in the presence of vibration on said housing for activating said SCR, said pendulum supporting means including means for adjusting the axial position of said pendulum within said ring to thereby predetermine the magnitude of the vibration for moving said pendulum into said operative position, said adjusting means including a retainer on said housing, a slide member mounted on said retainer for movement into a selected vertical position, a strand of predetermined length connected between said slide member and said pendulum to provide a constant frequency of sensitivity, said slide member being movable into said selected vertical position for adjusting the sensitivity of said vibration responsive switch means at said constant frequency of sensitively, said SCR being connected in series with said audible alarm, the positive terminal of said battery being connected to one side of said audible alarm and the negative terminal of said battery being connected to the cathode of said SCR, means for connecting said ring to the gate of said SCR and means for connecting said pendulum to one side of said audible alarm.

4,282,519

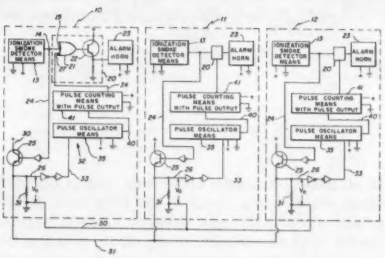
INTERCONNECTION OF ALARMS OF SMOKE DETECTORS WITH DISTINGUISHABLE ALARMS

Stephen A. Haglund, Minnetonka, and Robert L. Payne, Crystal, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 6, 1977, Ser. No. 839,874

Int. Cl.[3] G08B *17/10, 21/00*

U.S. Cl. 340—628 **4 Claims**



3. In a circuit for a plurality of abnormal condition detector alarm devices each comprising;

an abnormal condition responsive means having a first output upon the presence of an abnormal condition, an annunciator means energized in a first type of operation upon the presence of said first output, switch means controlled by said first output, first circuit means producing a second output when said switch means is operated upon the presence of an abnormal condition, annunciator circuit control means connected to said annunciator means and having an input circuit responsive to said second output for energizing said annunciator means in a second type of operation which would be dominated by said first type of operation, and second circuit means interconnecting said first circuit means of all of said plurality of said devices whereby upon one of said devices sensing an abnormal condition and having said first output, said annunciator means of said one device is operated with a first type of operation and said second output of said one device is connected to said annunciator circuit control means of the other of said plurality of devices to energize their annunciator means with a second type of operation to indicate that the abnormal condition is at said one of said devices.

4,282,520

PIEZOELECTRIC HORN AND A SMOKE DETECTOR CONTAINING SAME

John I. Shipp, and Charlie C. Rogers, III, both of 212 N. Jackson, Tullahoma, Tenn. 37388

Filed Oct. 25, 1978, Ser. No. 954,475

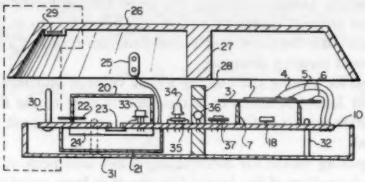
Int. Cl.[3] G08B *17/10, 3/00;* **G01T** *1/18*

U.S. Cl. 340—629 **14 Claims**

4. A smoke detector, comprising: a radioactive source enclosed in an ionization chamber wherein a voltage change is produced in response to the presence of smoke particles and wherein the voltage change activates a piezoelectric horn of the detector,

the piezoelectric horn comprising a power source connected to an oscillator circuit and a tone transducer, wherein the

tone transducer forms a surface of at least one resonant chamber having at least one air passage opposite the trans-



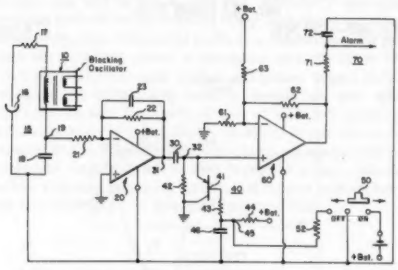
ducer and wherein the tone transducer is attached to the resonant chamber at the nodal circle of the transducer.

4,282,521

REGULATING CIRCUIT FOR GASEOUS IMPURITY DETECTOR

Leonard N. Lieberman, La Jolla, Calif., assignor to TIF Instruments, Inc., Miami, Fla.

Filed Nov. 13, 1979, Ser. No. 93,543
Int. Cl.³ G08B *17/10*; G01M *3/04*
U.S. Cl. 340—632 **16 Claims**



1. Apparatus for detecting gaseous impurities in an atmosphere comprising:

an asymmetrical electrode pair disposable in said atmosphere;

means for forming a corona discharge across said electrode pair in the continuous corona region;

means for forming a first signal representative of the mean corona current of said discharge, said signal being representative of the concentration of the gaseous impurity;

means for forming a second signal which is a function of said first signal;

means for storing said second signal relatively rapidly, whereby there is recorded a representation of said mean corona current at the time said second signal is stored, and for updating relatively slowly the signal that is stored;

switching means having at least two operative states, said second signal being stored relatively rapidly when said switching means is in a first state and said stored signal being updated relatively slowly when said switching means is in a second state; and

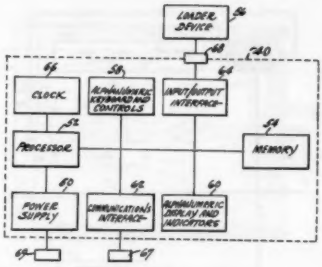
means for sensing a change in the mean corona current relative to said stored signal and for producing an output signal when said change in the mean corona current is greater than a predetermined amount.

4,282,522

DISPLAY/MEMORY/CONTROL SYSTEM FOR FORWARD OBSERVER SOURCE DATA

Seth L. Everett, Jr., Lincroft, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 761,145, Jan. 21, 1977, abandoned. This application Feb. 2, 1979, Ser. No. 8,677
Int. Cl.³ G08B *5/36*
U.S. Cl. 340—711 **5 Claims**



1. A message terminal device comprising:

a housing,

a photographic film strip having a plurality of frames of prerecorded selective alphanumeric messages and coded position indicating markings associated with respective frames having said messages,

a window in said housing for visually displaying said film strip frames of selective alphanumeric messages,

means in said housing for holding and transporting said film strip across said window,

photosensing means in said housing adjacent said film strip for sensing said coded markings of said associated respective frames to control the position of said respective frames having said selective messages at said window,

first memory means for controlling the sequence of movement of said film in accordance with said coded markings to display said selective alphanumeric messages,

second memory means for storing information related to said selective alphanumeric messages for subsequent transmission.

means for manually selecting from said first memory means prerecorded alphanumeric messages to be displayed at said window and for inserting said information related to said selective messages into said second memory means,

means for displaying alphanumeric information related to said selective messages, and

means for communicating said stored information to another location.

4,282,523

METHOD AND APPARATUS FOR LOGGING INCLINED EARTH BOREHOLES

Arthur H. Youmans, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 847,962, Nov. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 838,686, Oct. 3, 1977, Pat. No. 4,109,521. This application Apr. 18, 1979, Ser. No. 31,245
Int. Cl.³ G01V *1/40*
U.S. Cl. 340—860 **2 Claims**

1. A method for logging the formations surrounding an earth borehole, comprising the steps of:

traversing an earth borehole with a well logging instrument connected to a well logging cable wound around a rotatable cable hoist drum at the earth's surface;

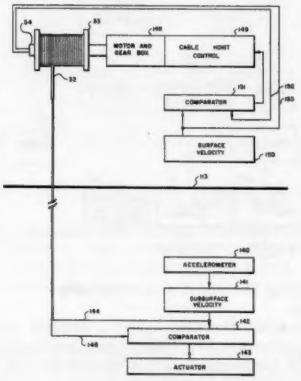
generating a signal functionally related to the velocity of said cable at the earth's surface;

generating a signal functionally related to the velocity of said well logging instrument;

comparing said cable velocity signal with said instrument velocity signal and generating a differential signal indicative of the comparison; and

controlling the rotation of said cable hoist drum in response to said differential signal for matching said cable velocity to said instrument velocity,

generating a signal functionally related to the tension on said well logging cable;



comparing said tension signal with said instrument velocity signal and generating a second differential signal indicative of the comparison,

comparing said second differential signal with a preselected threshold signal; and

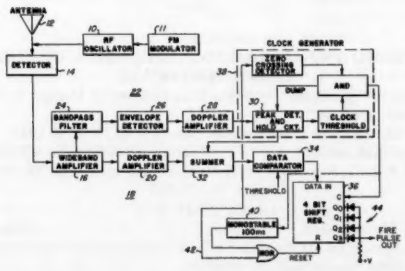
generating a drive signal for initiating motive means contained in said well logging instrument upon the occurrence of said second differential signal exceeding said preselected threshold level in order to assist with displacing a well logging instrument through an earth borehole.

4,282,524

LINEAR BESSEL RANGING RADAR

Steven W. Eymann, Tempe; Mark A. Fried, and Thomas L. Harris, both of Scottsdale, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 20, 1978, Ser. No. 971,160
Int. Cl.[3] G01S *13/32*
U.S. Cl. 343—14 **7 Claims**



1. In a continuous wave frequency modulated radar for fixed short distance ranging wherein a demodulated signal thereof comprises at least J_0 and J_1 Bessel function signal terms, a signal processing system comprising:

first channel means for filtering and amplifying one of the J_0 and J_1 terms;

second channel means for filtering and amplifying another of the J_0 and J_1 terms, the amplification factor of said second channel means exceeding the amplification factor of said first channel means by a ratio corresponding to an amplitude ratio between said Bessel function terms at a preselected ranging distance;

means for sensing and holding a peak value of said another of said J_0 and J_1 terms to correspond in time to the time at which said one of the J_0 and J_1 terms reaches a peak value; and

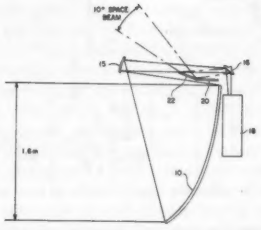
comparing means for determining when said peak value of said another of the J_0 and J_1 terms is at least equal to said peak value of said one of the J_0 and J_1 terms and for generating an output signal responsive to said at least equal relationship.

4,282,525

MICROWAVE LIMB SOUNDER

Jacob J. Gustincic, deceased, late of Marina Del Rey, Calif. (by Ruthann Gustincic, administratrix), and Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Jacob J. Gustincic, deceased

Filed Sep. 24, 1979, Ser. No. 78,612
Int. Cl.[3] H04B *7/00*
U.S. Cl. 343—100 ME **17 Claims**



1. In a microwave limb sounder, an antenna system and a plurality of radiometer heads, said antenna system comprising a singly curved parabolic main reflector fed by individual subreflectors disposed along a horizontal line, one subreflector for each of said radiometer heads, said radiometer heads being secured behind said main reflector, said main reflector being parabolic in the vertical direction and linear in the horizontal direction, and tiltable mirror means disposed above and behind the upper edge of the main reflector for receiving limb radiation while in a first position, whereby each subreflector which collects and focuses radiation from a portion of the main reflector directs it into a separate radiometer head, said antenna system further comprising a target plate in front of the main reflector in a position between reflected radiation from the main reflector to the subreflectors and radiation from the subreflectors to the tiltable mirror means, said target position being selected for directing radiation therefrom to said radiometer head for calibration while said tiltable mirror means is tilted down from the first position to a second position, and means for directing radiation from cold space above the horizon into said radiometer heads while said tiltable mirror means is tilted to a third position.

4,282,526

ROD ANTENNA SUPPORT

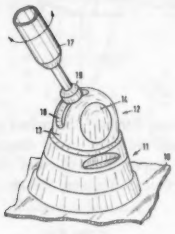
Reinhard Alf, and Kurt Klinkwitz, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 23, 1980, Ser. No. 114,671

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1979, 2906403

Int. Cl.³ H01Q *1/32*

U.S. Cl. 343—715 **3 Claims**



1. In a rod antenna support including a foot portion adapted to be affixed to a base and having a longitudinal axis generally perpendicular to the base when the foot portion is mounted thereon; a pivotal joint mounted in the foot portion and having a socket provided with a slot and a cylindrical body received in the socket for rotary motion in a direction transverse to the longitudinal axis of the foot portion; the cylindrical body having a diametral threaded bore; and a terminal screw forming an end portion of a rod antenna; the terminal screw projecting through the slot of the socket and threadedly engaging the threaded bore of the cylindrical body; and clamping means for immobilizing the cylindrical body in a desired angular position when the terminal screw is threaded into the bore; the improvement wherein said socket comprises means defining a throughgoing cylindrical passage having an axis which is transverse to said longitudinal axis of said foot portion; said cylindrical body being rotatably received in said throughgoing passage; and further wherein said clamping means comprises a flange-like stop affixed to said terminal screw outside said socket; said stop engaging an external face of said socket when said terminal screw is threaded into said bore.

4,282,527

MULTI-SPECTRAL DETECTION SYSTEM WITH COMMON COLLECTING MEANS

Jay B. Winderman, Claremont, and Fernand B. Kuffer, Brea, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jun. 11, 1979, Ser. No. 47,452

Int. Cl.³ H01Q *21/28*; G02B *5/16*

U.S. Cl. 343—725 **2 Claims**

1. A multi-spectral detection system for detecting radiation within frequency bands that are in diverse portions of the electromagnetic spectrum, a first band being in the radio frequency portion, and a second band being in the ultraviolet-through-infrared portion, comprising:

common radiant energy collection means having a boresight axis for collecting radiant energy in said diverse portions of the electromagnetic spectrum and focusing said collected energy in a common focal plane about said axis;

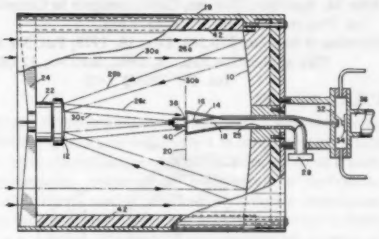
first means coaxially positioned at said common focal plane for transferring said collected radiant energy in said first band from said focal plane to a detector of said radiant energy in said first band; and

second means coaxially positioned at said common focal plane for transferring said collected radiant energy in said second band from said focal plane to a detector of said radiant energy in said second band;

wherein the collection means comprise:

a Cassegrain primary reflector for reflecting radiant energy in said predetermined diverse portions of the electromagnetic spectrum; and

a Cassegrain subreflector positioned along the axis of the primary reflector for re-reflecting radiant energy reflected from the primary reflector along said boresight axis and focusing said re-reflected radiant energy in a common focal plane about said axis;



wherein the first means comprises a feed horn having an entrance in said common focal plane about said axis;

wherein the second means comprises optical fibers having openings in said common focal plane about said axis; and

wherein the system further comprises:

a baffle coaxially positioned for blocking light other than said re-reflected radiation from being received and transferred by the optical fibers.

4,282,528

PLURAL ANTENNAS HAVING A SLEEVE DIPOLE

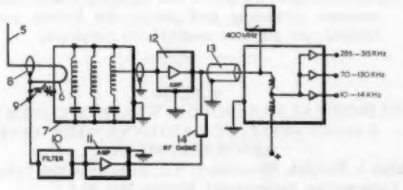
John F. Aspinwall, Purley, England, assignor to Communications Patents Limited, London, England

Filed May 3, 1979, Ser. No. 35,547

Claims priority, application United Kingdom, May 9, 1978, 18580/78

Int. Cl.³ G06F *3/14*

U.S. Cl. 343—727 **9 Claims**



1. A dual frequency band antenna arrangement with a single lead cable comprising in combination, a first antenna consisting of a vertically disposed sleeve dipole antenna having an electrical length related to the wavelength of a first higher frequency band mounted on an elongate support, a mounting assembly for said support, and a feeder cable incorporating screened and screening conductors and consisting of said single lead cable extending longitudinally of the support from the first antenna to the mounting assembly and having a vertically disposed dimension providing an aperiodic whip antenna for a second lower frequency band, the screened conductor being connected within said mounting assembly to means for processing signals in said first higher frequency band received by the first

antenna, the screening conductor forming a second antenna connected to the means processing signals in the first band within said mounting assembly by filter means grounding that conductor only for the frequency band of the first band and further connected within said mounting means to means for processing signals in at least said second lower frequency band received by the screening conductor as an ungrounded vertically disposed antenna member for the lower frequency band.

4,282,529

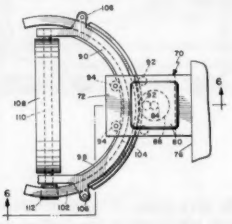
DIFFERENTIAL DRIVE ROLLING ARC GIMBAL

John M. Speicher, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Division of Ser. No. 970,284, Dec. 18, 1978, Pat. No. 4,238,802. This application Feb. 28, 1980, Ser. No. 125,803

Int. Cl.³ H01Q *3/08*

U.S. Cl. 343—765 **2 Claims**



1. A differential drive rolling arc gimbal, comprising:

a mounting having means for attachment to a supporting structure;

an arcuate, substantial semi-circular yoke supported in said mounting for rotation about its center of radius;

a platform having a supporting shaft pivotally mounted in said yoke for rotation about an axis orthogonal to the axis of rotation of the yoke;

a pair of motors on said mounting with drive means connected to said yoke and said platform for selective independent and combined rotary motions of the yoke and platform;

said drive means including a drive wheel on each of said motors, a pair of axially spaced ring members mounted on said yoke for rotation about the center of radius of the yoke, each of said ring members being drivingly engaged by one of said drive wheels; and

a pinion fixed on one end of said supporting shaft, said ring members straddling said pinion and having opposed toothed rack portions meshed with the pinion.

4,282,530

CYLINDRICAL PARABOLOID WEATHER COVER FOR A HORN REFLECTOR ANTENNA WITH WAVE ABSORBING MEANS

Ralph A. Semplak, Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 106,466

Int. Cl.³ H01Q *13/00*

U.S. Cl. 343—784 **4 Claims**

1. A horn reflector antenna comprising

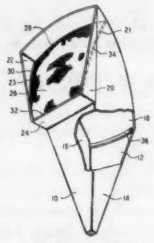
an offset main reflector (**18**) including a reflecting surface and a focal point associated therewith;

absorbing material (**36**) disposed on the edge of said reflecting surface closest to said focal point;

a feed arrangement (**10, 12, 14, 16**) disposed at said focal point and in relation to said reflector so as to create an antenna aperture, said feed arrangement capable of transmitting and receiving microwave radiation; and

a weather cover (**26**) disposed at said aperture capable of reflecting a portion of said microwave radiation emanating from said feed arrangement and impinging the surface thereof;

CHARACTERIZED IN THAT



the weather cover further comprises a cylindrical paraboloid shape, said weather cover disposed to be capable of focusing the impinging radiation onto the edge of the reflecting surface containing the absorbing material.

4,282,531

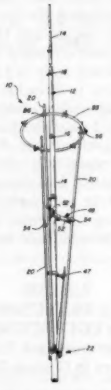
VERTICAL ANTENNA WITH UPWARDLY FLARING BASE MOUNTED CONDUCTORS

Herbert R. Blaese, Chicago, Ill., assignor to Avanti Research & Development, Inc., Addison, Ill.

Filed Jan. 4, 1980, Ser. No. 109,494

Int. Cl.³ H01Q *9/32*

U.S. Cl. 343—791 **19 Claims**



1. A two-way communications antenna comprising:

an elongated radiating element having an electrical length of about three-quarters wave length; and

diverging element means connected at one end to said radiating element adjacent an end thereof and extending therefrom towards the other end of said radiating element and at an acute angle thereto, said diverging element means having an effective electrical length of about one-quarter wave length.

4,282,532

INK JET METHOD AND APPARATUS USING A THIN FILM PIEZOELECTRIC EXCITOR FOR DROP GENERATION

Roger G. Markham, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 4, 1979, Ser. No. 45,045

Int. Cl.³ G01D *15/18*

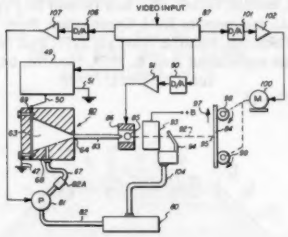
U.S. Cl. 346—75 **39 Claims**

1. Apparatus for generating liquid drops at a desired drop generation frequency comprising

a body including a liquid chamber defining an acoustic resonant frequency for a liquid in the chamber near the drop generation frequency,

inlet means for coupling the chamber to a source of liquid under pressure,

at least one nozzle means coupled to the chamber for emitting a continuous stream of liquid due to liquid pressure from which drops are formed and



thin, non-bending excitation means coupled to the chamber for stimulating pressure variations in a liquid in the chamber at a frequency near the drop generation frequency but itself having an acoustic resonant frequency substantially higher than the drop generation frequency including a piezoelectric material and electrode means for coupling to the piezoelectric material an AC electrical energy source having a frequency near the drop generation frequency for creating dimensional changes in the excitation means whereby drops are formed from a continuous stream near the desired drop generation frequency.

4,282,533

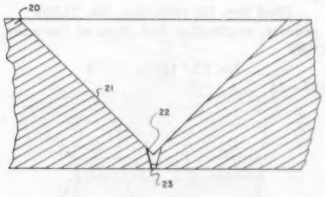
PRECISION ORIFICE NOZZLE DEVICES FOR INK JET PRINTING APPARATI AND THE PROCESS FOR THEIR MANUFACTURE

Kenneth Brooks, Charlotte, N.C.; Paul R. Smith, Princeton, W. Va., and Thomas E. Morris, Concord, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 22, 1980, Ser. No. 123,629

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—75 **13 Claims**



1. In an ink jet printing system of the type wherein ink is delivered to a nozzle member and caused to break into droplets after issuing from the nozzle, a charging electrode is positioned in the region in which the ink jet breaks into droplets and the charging electrode is adapted to respond to data signals selectively to charge the droplets as they are formed, the improvement comprising: a metallic nozzle member less than about 1000 microns thick provided with an orifice extending therethrough, said orifice including a cylindrical portion adjacent the outlet face of said nozzle having a height ranging from about 0.25 to 5 times its diameter and at least one frustoconical section divergent toward the face opposite said outlet face and communicating with said cylindrical portion, said frustoconical section and said cylindrical portion having a meeting angle of less than about 60 degrees.

4,282,534

THERMAL RECORDING ELEMENTS

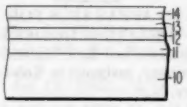
Fumiaki Shinozaki; Tomizo Namiki; Masao Kitajima; Tomoaki Ikeda, and Yuzo Mizobuchi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 26, 1979, Ser. No. 52,511

Claims priority, application Japan, Jun. 26, 1978, 53/77268

Int. Cl.³ G01D *15/34;* B32B *3/00*

U.S. Cl. 346—135.1 **14 Claims**



1. A thermal recording element comprising a support having formed thereon directly or indirectly a recording layer, a first protective layer comprising a compound selected from a halogenated polyolefin, polystyrene, a polystyrene derivative, halogenated rubber, and a styrenevinyltoluene copolymer formed on the recording layer, and a second protective layer comprising a polymer having high surface strength formed on the first protective layer, wherein the thickness of the second protective layer is about 0.1 μm to 20 μm.

4,282,535

CIRCUIT ARRANGEMENT FOR THE OPERATION OF RECORDING NOZZLES IN INK MOSAIC RECORDING DEVICES

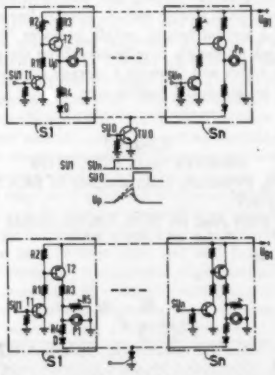
Hans Kern, Munich, and Reiner Lichti, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,677

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2850016

Int. Cl.³ G01D *15/18;* H01L *41/10*

U.S. Cl. 346—140 R **19 Claims**



1. In a circuit arrangement for the operation of recording nozzles in ink mosaic recording devices employing a plurality of tubular drive elements containing recording fluid to be expelled thereby consisting of electromechanical transducers having a diameter and internal volume which vary in the presence of different voltage potentials applied to the transduc-

ers, the combination of a first electronic switch for each of the electromechanical transducers, for selectively supplying to the respective electromechanical transducers in sequence a first voltage potential for respectively expanding said transducers, and a second electronic switch common to all of said electromechanical transducers for supplying in common a second voltage potential to all of said electronic transducers for contracting said transducers for expelling said fluid.

4,282,536

PROCESS AND APPARATUS FOR AUTOMATIC DRAFTING DEVICES

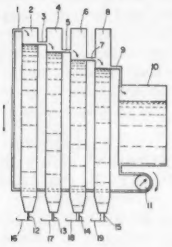
Rolf Paschen, Elmshorn, and Rolf Martens, Hamburg, both of Fed. Rep. of Germany, assignors to Koh-I-Noor Rapidgoraph, Inc., Bloomsbury, N.J.

Filed Feb. 13, 1980, Ser. No. 121,336

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1979, 2916118

Int. Cl.³ G01D *15/16;* **B43L** *13/00;* **B43K** *8/00*

U.S. Cl. 346—140 R **6 Claims**



1. In a process for drawing with a plurality of tube pens, which can be selectively brought into contact with a drawing surface, the improvement comprising a writing fluid delivery mechanism which maintains the writing fluid in the tube pens at predetermined values, characterized by the steps of a writing fluid delivery mechanism which initially feeds writing fluid to the tube pen with the smallest line width, so that excess writing fluid flows therefrom by means of an overflow, located at a first predetermined height, and then to at least one additional tube pen, with a progressively greater line width and an overflow at a second height, which is lower than said first height, said ink ultimately overflowing from the pen with the greatest line width and through a storage container and ultimately back to said initial feeding step.

4,282,537

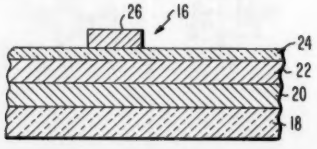
SILICON MOS INDUCTOR

Isaac Balberg, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,013

Int. Cl.³ H01L *49/02*

U.S. Cl. 357—6 **8 Claims**



1. An MOS inductor comprising:

(a) an insulating substrate;

(b) a conductive metal layer on a surface of said insulating substrate;

(c) an amorphous silicon layer on the surface of said metal layer;

(d) an insulating layer on the surface of said amorphous silicon layer; and

(e) a metal contact on the surface of said insulating layer.

4,282,538

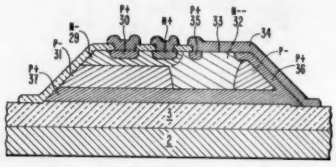
METHOD OF INTEGRATING SEMICONDUCTOR COMPONENTS

Howard R. Beelitz, Gillett, Pa., and Donald R. Preslar, Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 850,672, Nov. 11, 1977, Pat. No. 4,199,860. This application Aug. 6, 1979, Ser. No. 64,279

Int. Cl.³ H01L *29/48*

U.S. Cl. 357—15 **7 Claims**



1. A PNP bipolar transistor and a Schottky diode in a single mesa form comprising:

a substrate for the mesa,

a base region having N— and N— — portions both extending to a free surface of said mesa,

a P type collector region at least a portion of which contacts said N— base portion between said N— base portion and said substrate,

a terminal metallization at said free surface to said N— — base portion forming a Schottky barrier, and

a separate termination at said free surface to said N-base portion.

4,282,539

FIELD EFFECT TRANSISTOR WITH DECREASED SUBSTRATE CONTROL OF THE CHANNEL WIDTH

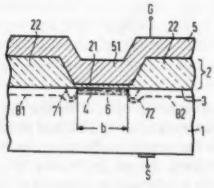
Lothar Schrader, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,899

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842589

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **6 Claims**



1. An insulated gate field effect transistor comprised of a semiconductor body of a first conductivity type having a first doping level, a source region and a drain region of the opposite conduction type in the semiconductor body, an insulating layer covering an upper surface of the semiconductor body, said insulating layer having thick film regions surrounding a thin film region, said thin film region disposed above an area of the semiconductor body between the source and drain regions to define a channel region in the semiconductor body, and a pair

of narrow strip zones in the semiconductor body parallel to a source-to-drain direction and disposed at the edges of said channel region, said strip zones having additional doping of a conductivity type opposite to the first conductivity type.

4,282,540

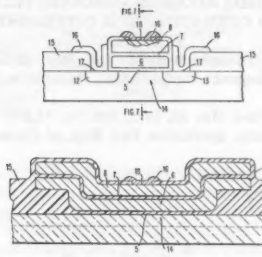
FET CONTAINING STACKED GATES

Tak H. Ning, Yorktown Heights; Carlton M. Osburn, Croton-on-Hudson, and Hwa N. Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 864,074, Dec. 23, 1977. This application Oct. 19, 1979, Ser. No. 86,608

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **18 Claims**



1. A field effect transistor (FET) which comprises a floating gate, a control gate above said floating gate, insulator between said floating gate and control gate; said floating gate and said control gate being self-aligned in both the width and length dimensions with respect to each other; source and drain regions wherein the floating gate and control gate are self-aligned with respect to said source and drain regions.

4,282,541

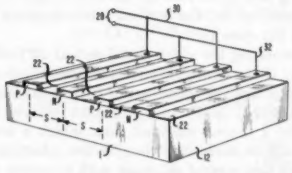
PLANAR P-I-N PHOTODETECTORS

Won-Tien Tsang, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1979, Ser. No. 106,704

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **7 Claims**



1. A light responsive device comprising

a body of light-absorbing semiconductor material and first and second opposite conductivity type zones contiguous with said body for collecting holes and electrons generated by the absorption of light in said body, characterized in that

said body comprises single crystal, semi-insulating material having a major surface on which light is made incident,

said first zone comprises single crystal, p-type semiconductor material which intersects a localized portion of said surface, and

said second zone comprises single crystal, n-type semiconductor material which intersects a different localized portion of said same surface so that light absorbed between said zones generates holes and electrons which are able to diffuse and/or drift to opposite ones of said zones.

4,282,542

INTERFERENCE-POTENTIAL-COMPENSATED THYRISTOR COMPRISING AT LEAST FOUR ZONES OF DIFFERENT TYPE OF CONDUCTIVITY

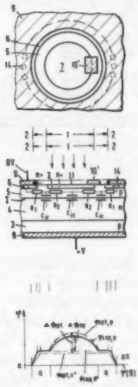
Dieter Silber, Obertshausen; Marius Füllmann, Neu-Isenburg, and Wolfgang Winter, Eschborn, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 81,805

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1978, 2843960

Int. Cl.³ H01L *29/74*

U.S. Cl. 357—38 **3 Claims**



1. An interference potential compensated thyristor comprising:

a semi-conductor body having; a common emitter zone of one conductivity type, a common main base zone of an opposite conductivity type in contact with said common emitter zone, a common control base zone of said one conductivity type in contact with said common main base zone defining one surface of said semiconductor body, at least first and second outer emitter zones of said opposite conductivity type in contact with said common control base, said outer emitter zones formed at said one surface of said semiconductor body with said common control base zone extending to said one surface between and around said outer emitter zones; a common metallized electrode layer in ohmic contact with said common emitter zone, a first opposite metallized electrode layer in ohmic contact with an edge portion of said first outer emitter zone and a portion of said common control base zone at said semiconductor body surface and over a junction between said common control base zone and said first outer emitter zone to ohmically connect said edge portion of said outer emitter zone and said common control base zone, a second opposite metallized electrode layer in contact with said second outer emitter zone, said first outer emitter zone forming part of a pilot thyristor part and said second outer emitter zone forming a part of a sequential thyristor part; wherein a substantially maximum value for the interference potential in said common control base zone adjacent said first outer emitter zone is applied to said edge portion of said first outer emitter zone in contact with said first opposite metallized electrode layer; only said edge portion of said first outer emitter zone being ohmically connected to said common control base zone; the size of said portion of said common control base zone in contact with said first opposite metallized electrode layer being dimensioned so

that a resistance between said first opposite metallized electrode layer and said sequential thyristor part being smaller than a resistance between said pilot thyristor part and said sequential thyristor part opposing a flow of triggering control current between said pilot thyristor part and sequential thyristor part.

4,282,543

SEMICONDUCTOR SUBSTRATE AND METHOD FOR THE PREPARATION OF THE SAME

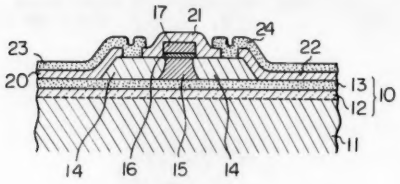
Masaru Ihara, and Masayuki Jifuku, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 815,784, Jul. 14, 1977, abandoned. This application Nov. 19, 1979, Ser. No. 95,783

Claims priority, application Japan, Jul. 30, 1976, 51/91528

Int. Cl.[3] **H01L** *29/34, 29/78, 27/12*

U.S. Cl. 357—54 **13 Claims**



1. A semiconductor substrate suitable for a semiconductor device, said substrate comprising

a base plate of single crystal silicon,

at least one insulating layer located on said base plate, each said insulating layer comprising a lower film comprising amorphous silicon dioxide facing said base plate and an upper film comprising single crystal sapphire located on said amorphous silicon dioxide lower film, said upper film having an epitaxial relation with said base plate, and

a layer comprising single crystal silicon on the uppermost one of said at least one upper film, said single crystal silicon layer having an epitaxial relation with said uppermost one of said at least one upper film.

4,282,544

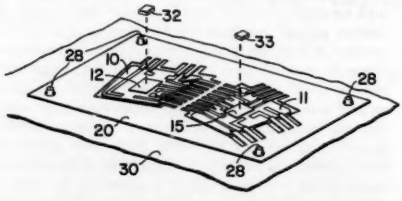
ENCAPSULATED HYBRID CIRCUIT ASSEMBLY

Robert A. Nowak, Mesa, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 859,424, Dec. 12, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,610

Int. Cl.[3] **H01L** *23/28, 23/16, 23/02*

U.S. Cl. 357—72 **3 Claims**



1. An integrated circuit assembly comprising:

(a) a plurality of nonconducting substrates, at least one of said substrates being disposed in a noncoplanar configuration with respect to at least one other of said substrates;

(b) conducting layers on said substrates comprising a plurality of connecting pads and artwork for attaching discrete components thereto forming an integral part thereof;

(c) at least one discrete component attached to said artwork;

(d) a lead frame comprising external leads, attached to said substrates for transmission of signals into and out of the assembly, and at least one interconnecting lead mechanically and electrically connecting said at least one of said substrates to said at least one other of said substrates, said at least one interconnecting lead being bent to dispose said at least one substrate and said at least one other substrate in a noncoplanar configuration; and

(e) means for encapsulating said substrates, said at least one discrete component and at least portions of said lead frame, said means for encapsulating being placed to allow noncoplanar disposition of said substrates.

4,282,545

METHOD AND APPARATUS FOR PLAYING BACK COLOR VIDEO RECORDS THROUGH TELEVISION RECEIVER OPERATING AT A DIFFERENT COLOR STANDARD

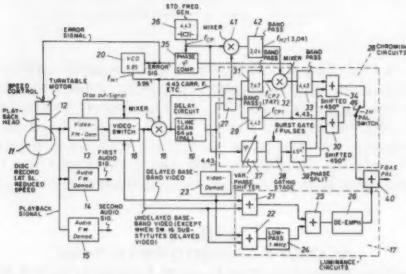
Peter Bragas, Hildesheim-Itzum, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,576

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825120

Int. Cl.[3] **H04N** *5/76, 5/02*

U.S. Cl. 358—4 **13 Claims**



1. A method of playing back recorded NTSC-type color television signals through a television receiver designed for reception of PAL-type color television signals utilizing a record moving and signal pick-up device arranged to operate at a record speed set for the receiver's line-scanning frequency, comprising the steps of:

(a) demodulating the video signal picked up from a record;

(b) mixing the video signal so demodulated with a first sideband in which the color carrier (fCP1) has the color carrier frequency (fCP) for which said receiver is designed and also a second sideband from which a second color signal can be derived for line-by-line selection;

(c) mixing said second sideband with a second mixing frequency (fM2) to convert the color carrier (fCP2) of the second sideband to coincide in frequency with said color carrier (fCP1) of said first sideband;

(d) generating PAL color synchronizing pulses from the output of a standard frequency generator operating at said color-carrier frequency (fCP) for which said receiver is designed and from horizontal scan synchronizing pulses obtained from the picked-up signal, with phase-splitting of the burst pulses so produced into components respectively shifted in phase by $+45°$ and $-45°$;

(e) adding said components of said color-synchronizing burst pulses respectively to said first and second sidebands having carrier frequencies of the same frequency; and

(f) alternately selecting, with a switch operating at half the line scanning frequency, each of said color signals consti-

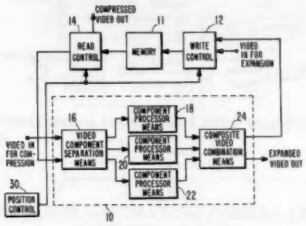
tuted respectively by said sidebands and the color synchronizing burst pulses respectively added thereto.

4,282,546

TELEVISION IMAGE SIZE ALTERING APPARATUS

Glenn A. Reitmeier, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,357
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—22 **6 Claims**



1. In television image size altering apparatus of the type wherein pixels relating to a composite video signal are sampled at a synchronous real time rate and wherein the flow of pixel information is coordinated through a memory by a write control and a read control, the improvement comprising:

means for separating the composite signal pixels into original pixels relating to each basic component of the video signal;

processor means relating to each basic component for deriving interpolated pixels from said original pixels at an effective rate less than the synchronous rate when compressing the picture size and at an effective rate greater than the synchronous rate when expanding the picture size; and

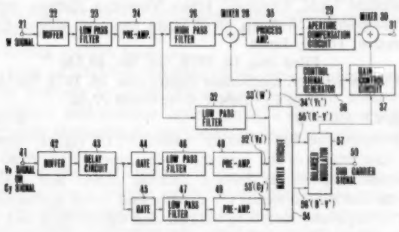
means for combining said interpolated pixels into new pixels relating to a new composite video signal, said new pixels being presented for display at the synchronous rate to alter the size of the television image.

4,282,547

COLOR IMAGE PICK-UP APPARATUS

Masanobu Morishita, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1979, Ser. No. 74,829
Claims priority, application Japan, Sep. 12, 1978, 53/112770
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—44 **9 Claims**



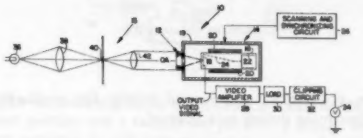
1. A color image pick-up apparatus comprising an analytical optical system for analyzing incident light into a cyan light component, a yellow light component and a white light component covering spectrum characteristics of said cyan and yellow light components, an image pick-up device for converting said cyan, yellow and white light components into electric output signals, means for separating the output signals of said image pick-up device into a cyan signal, a yellow signal and a white signal, and a matrix circuit for synthesizing said cyan signal, said yellow signal and said white signal into a luminance signal and red and blue color difference signals.

4,282,548

METHOD AND APPARATUS FOR MEASURING AND/OR SETTING LENS FOCUS DISTANCE

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 14, 1980, Ser. No. 140,086
Int. Cl.³ H04N *7/02*
U.S. Cl. 358—107 **22 Claims**



1. Apparatus for setting the focus of a lens for a predetermined object distance, said apparatus comprising:

means for defining a photosensitive surface having an electrical characteristic which locally varies in accordance with the intensity of illumination incident thereto and for providing an analog electrical signal that varies in a predetermined sequence in accordance with the local value of said electrical characteristic of said photosensitive surface;

means for mounting a lens, the focus of which is to be set, in a predetermined manner with respect to said photosensitive surface such that light emerging from the lens can impinge on said photosensitive surface and form thereon a pattern of illumination whose area varies in accordance with the state of focus of the lens;

means for providing a source of illumination which is directed at the lens and effectively originates from the predetermined object distance for which the lens focus is to be set, said photosensitive surface, said mounting means, and said illumination source providing means being arranged with respect to one another so that the best focus of the lens for the predetermined object distance occurs when the area of the pattern of illumination formed by the lens on said photosensitive surface is smallest; and

means for receiving said analog electrical signal and in response thereto providing an output response proportional to the size of the area of the pattern of illumination formed on said photosensitive surface so that the state of focus of the lens can be determined as the lens focus is adjusted.

4,282,549

PULSE GENERATOR FOR A HORIZONTAL DEFLECTION SYSTEM

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 11, 1979, Ser. No. 102,575
Int. Cl.³ H04N *5/06*
U.S. Cl. 358—150 **10 Claims**

1. A pulse generator for producing an output pulse of a known duration in response to a command signal comprising:

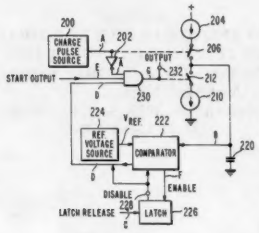
a charge storage device;

a source of current control pulses having a fixed duration;

first means, responsive to said control pulses, and coupled to said charge storage device, for maintaining a current flow of a first polarity to said charge storage device continuously during the occurrence of said control pulses to alter the charge of said device from a first charge condition to a second charge condition;

second means, coupled to said charge storage device, for providing a current flow of a second polarity to said

charge storage device for an interval initiated in response to said command signal and terminated in response to the attainment by said charge storage device of said first charge condition; and



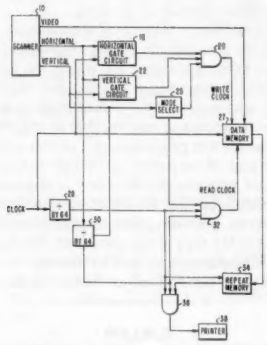
means, coupled to said second means, for producing an output pulse during said interval.

4,282,550

DIGITAL MAGNIFICATION SYSTEM

John W. Coviello, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 27, 1979, Ser. No. 97,768
Int. Cl.³ H04N *5/22*
U.S. Cl. 358—160 **6 Claims**



1. A digital magnification system for a scanned image, comprising in combination:

(a) first counter means responsive to a horizontal synchronizing signal and a high speed clock signal to generate a first time gate defining the horizontal portion of each line of said scanned image;

(b) second counter means responsive to synchronizing signals to generate a second time gate defining a selected number of scan lines of said scanned image;

(c) memory means for receiving and storing data samples in response to said first and second time gates said data samples corresponding to a selected portion of said scanned image; and

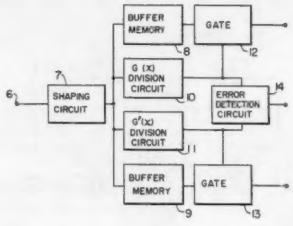
(d) circuit means for controlling said memory means to repeatedly read said stored data samples to produce a magnified image of a selected portion of said scanned image.

4,282,551

PCM RECORDING AND REPRODUCING APPARATUS

Yasunori Kanazawa, Hachioji; Takao Arai, Yokohama; Norio Yokozawa, Fuchu, and Wasao Takasugi, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1980, Ser. No. 138,275
Claims priority, application Japan, Apr. 11, 1979, 54/43053; Feb. 20, 1980, 55/19034
Int. Cl.³ G11B *5/00, 5/09*
U.S. Cl. 360—32 **7 Claims**



1. A PCM recording and reproducing apparatus comprising

(a) code sequence generating means for generating a code sequence having a data frame and a control signal frame,

said data frame including a sampled signal word which is a digital version of an analog audio signal and a first error detection code generated based on said sampled signal word,

said control signal frame including a control signal which is a digital version of a system control information and a second error detection code generated based on said control signal,

said first and second error detection codes being generated under different arithmetic conditions, and

(b) frame discrimination means receiving said code sequence including said two different types of frames, said discrimination means having an error detection code detecting circuit having arithmetic conditions corresponding to said arithmetic conditions established for generating said first and second error detection codes,

whereby said data frame and said control signal frame are discriminated from said code sequence.

4,282,552

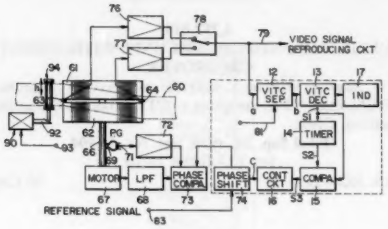
APPARATUS FOR REPRODUCING A VIDEO SIGNAL INCLUDING AN ADDRESS SIGNAL WHEN THE VIDEO TAPE MOVES AT VARIOUS SPEEDS

Katsuichi Tachi, Kawasaki; Ichiro Ninomiya, Hatano, and Jun Takayama, Kokubunji, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,546
Claims priority, application Japan, Jun. 19, 1978, 53-74037
Int. Cl.³ H04N *5/78;* **G11B** *21/02*
U.S. Cl. 360—70 **6 Claims**

1. Apparatus for correctly reading VITC signals recorded on slant tracks of the magnetic video tape with a video tape recorder reproducer having rotating drums and scanning heads and motor means for driving said heads comprising, a VITC separator receiving the detected signals from said scanning heads and separating the address signals, a VITC decoder receiving the output of said VITC separator and decoding the various address signals, an indicator connected to said VITC decoder and indicating the various addresses such as hours, minutes, seconds and frame or field, a timer receiving an input from said VITC decoder, a comparator receiving inputs from said timer and said VITC decoder and producing an output signal indicative of the synchronization error between said

video tape and said scanning heads, and synchronization correction means connected to the output of said comparator to



assure synchronization between said video tape and said scanning heads.

4,282,553

METHOD FOR GENERATING DIGITAL ACTUAL VELOCITY SIGNALS

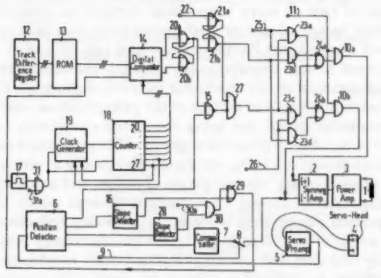
Peter Wentzel, Augsburg, and Hermann Eiting, Unterpfaffenhofen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 25, 1979, Ser. No. 60,374

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833591

Int. Cl.³ G11B *21/02*

U.S. Cl. 360—75 **10 Claims**



1. A method for generating digital signals representing the actual velocity of a disk storage having a plurality of data tracks thereon, each said data track having a data track center; for positioning write/read heads associated with the disk storage, said method comprising the steps of:

monitoring the disk position;

providing an electronic position signal corresponding to the disk position by means of a servo-head and a servo-amplifier, said position signal having a plurality of zero passages through a time axis each corresponding to a data track center;

converting said position signal to a series of first pulse signals each having a leading edge and a lagging edge respectively corresponding to successive data track centers;

simultaneously converting said position signal to a series of reset pulses corresponding to each said zero passage for operating a clock and a binary counter connected thereto;

supplying said series of first pulse signals to said counter;

periodically sampling said counter for obtaining a count of said series of first pulse signals therefrom representing said actual velocity; and

resetting said counter upon each occurrence of a zero passage.

4,282,554

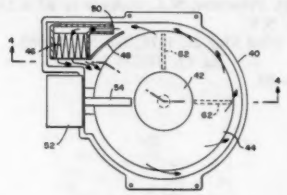
ENCLOSED DISC DRIVE WITH IMPROVED AIR FLOW

Bin L. Ho, and Stephen Bibby, both of Los Gatos, Calif., assignors to Priam, Cupertino, Calif.

Filed Jan. 26, 1979, Ser. No. 6,776

Int. Cl.³ G11B *17/04*

U.S. Cl. 360—97 **10 Claims**



1. An enclosed disc drive comprising a container including a bottom portion and a mating top portion, a spindle and drive motor mounted in said bottom portion with said spindle positioned for receiving magnetic disc means, magnetic disc means mounted on said spindle within said bottom portion and being rotatable by said drive motor, a first air filter positioned in said container in the plane of said disc and in relatively close proximity to the periphery of said disc, guide means provided between said disc and said first air filter for directing air flow created by the spinning of said disc to said first filter, and means for creating positive air pressure differential between the space below said disc and the space above said disc when said disc is enclosed by said top portion and said bottom portion and said disc is rotated wherein the space below said disc is at a higher pressure than the space above said disc whereby contaminants from outside said enclosed disc drive are discouraged from entering through said spindle.

4,282,555

OVERVOLTAGE PROTECTION MEANS FOR PROTECTING LOW POWER SEMICONDUCTOR COMPONENTS

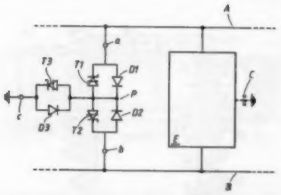
Per Svedberg, Vallingby, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Aug. 13, 1979, Ser. No. 65,774

Claims priority, application Sweden, Aug. 17, 1978, 7808731

Int. Cl.³ H02H *3/20, 9/04*

U.S. Cl. 361—56 **14 Claims**



1. Apparatus for protecting a low power semiconductor circuit against overvoltages at input connections of the circuit, comprising:

at least two connector branch means, one end of each connector branch means connected at a common point and the other end of each connector branch means connected to an associated one of said input connections, each connector branch means including a diode thyristor having means for self-ignition at a particular preset voltage level and a diode connected in opposed relation to the diode thyristor, the diode thyristors of each connector branch means being positioned to conduct in the same direction with respect to said common point; and

wherein each of said diode thyristors includes means for

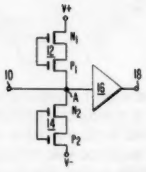
defining a particular thyristor holding current that exceeds the value of maximum direct current that flows when said input connections are shorted.

4,282,556

INPUT PROTECTION DEVICE FOR INSULATED GATE FIELD EFFECT TRANSISTOR

Alfred C. Ipri, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,085
Int. Cl.[3] H02H 3/22
U.S. Cl. 361—56 6 Claims



1. An overvoltage protection circuit for the input of a field effect device to be protected, comprising:

a pair of insulated gate transistors consisting of an N channel transistor and a P channel transistor, each transistor of the pair having a conduction path and a gate electrode;

a source of operating potential;

the N channel transistor connected to the source of operating potential;

the P channel transistor connected to the input of the device to be protected;

the conduction paths of each of the transistors connected in series between the source of operating potential and the input to the device to be protected; and

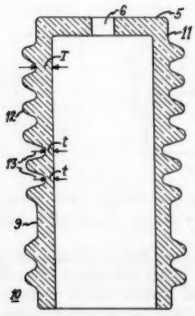
means connecting the gate electrodes of each of the transistors to each other.

4,282,557

SURGE VOLTAGE ARRESTER HOUSING HAVING A FRAGIBLE SECTION

Earl W. Stetson, Pittsfield, Mass., assignor to General Electric Company

Filed Oct. 29, 1979, Ser. No. 89,149
Int. Cl.[3] H02H 3/22
U.S. Cl. 361—117 7 Claims



1. A voltage surge arrester housing comprising:

an electrically insulating closure open at least at one end and having a first wall thickness for providing break resistant properties to the housing; and

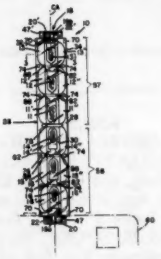
at least one frangible wall section for providing a preferred breaking portion to said housing, said frangible wall section comprising a first separate portion and a second separate portion of said closure cemented together to form a joint.

4,282,558

MULTILAMP PHOTOFLASH UNIT WITH CIRCUIT CROSSOVER

John W. Shaffer; William T. Colville, and David W. Mecone, all of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 74,194
Int. Cl.[3] G03B 15/02
U.S. Cl. 362—15 10 Claims



1. In a multilamp photoflash unit comprising, in combination, a printed circuit board in the form of an elongated strip and having lamp-firing circuitry on a surface thereof, an array of electrically ignitable flashlamps divided into first and second groups of two or more lamps each disposed on respectively opposite halves of said printed circuit strip over said surface thereof, each of said flashlamps having a pair of lead-in wires connected to said circuitry, said circuitry including first and second common circuit conductor runs which are spaced apart from each other on said surface of the printed circuit strip, said first common circuit run being connected electrically to one lead-in wire of each of said first group of lamps and said second common circuit run being connected electrically to one lead-in wire of each of said second group of lamps, and an elongated housing member having a longitudinal channel within which said printed circuit strip is located and having reflective surfaces adjacent said flashlamps, means for electrically interconnecting said first and second common circuit conductor runs comprising: a continuous coating of electrically conductive reflective material covering the walls of said channel for providing said reflective surfaces, and first and second means electrically connecting said reflective surfaces to said first and second common circuit conductor runs, respectively, whereby said conductive refletive material functions as an interconnecting jumper therebetween.

4,282,559

PHOTOFLASH UNIT HAVING FLASHLAMPS USING LOOPED LEAD-IN WIRES FOR RETENTION

Emery G. Audesse, Beverly, Mass.; Boyd G. Brower; Donald H. Pfefferle, both of Williamsport, Pa., and James L. Holmes, Montoursville, Pa., assignors to GTE Products Corporation, Stamford, Conn.

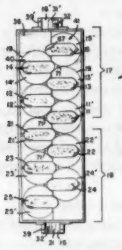
Filed Sep. 24, 1979, Ser. No. 78,353
Int. Cl.[3] G03B 15/02
U.S. Cl. 362—15 11 Claims

1. A photoflash unit comprising:

a circuit board including an electrically insulative substrate member and lamp-firing circuitry on at least one surface of said substrate member, said substrate member including an opening therein located relative to said lamp-firing circuitry; and

at least one electrically-activated flashlamp including a light-

transmitting envelope and a pair of electrically conductive lead-in wires projecting from said envelope, at least one of said lead-in wires electrically connected to said lamp-fir-



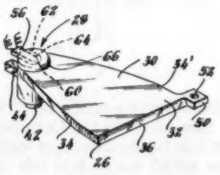
ing circuitry and including a looped portion frictionally positioned within said opening within said substrate member and projecting therefrom to secure said flashlamp to said substrate member.

4,282,560

LIGHT DISTRIBUTOR

George N. Kringel, Westport, and Nicholas E. Sachuk, Stamford, both of Conn., assignors to A.C.A. Products, Inc., Riverside, Conn.

Continuation of Ser. No. 3,214, Jan. 15, 1979, abandoned. This application Jun. 23, 1980, Ser. No. 162,204
Int. Cl.³ G01D *11/28*
U.S. Cl. 362—26 **25 Claims**



1. A light distributor to provide a desired distribution of light from a lamp comprising

a lamp supporting segment, said lamp supporting segment including a light source region in which said lamp can be placed with said light source region having a predetermined dimension along a light guiding direction; and

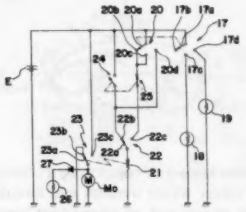
a generally planar light guide extending along the light guiding direction to intercept and guide light from the lamp supporting segment to a longitudinal guide edge, said light guide having planar faces bounded by sides at least one of which sides, commencing in the vicinity of the lamp supporting segment, diverges from the lamp supporting segment along a predetermined curve, said curve being selected so that light intercepted by the light guide from the light source region in the lamp supporting segment and incident upon said at least one side is reflected from said at least one side in a generally uniform manner across the longitudinal guide edge to establish at and emit from said edge at even distribution of light emanating from the light source region of said lamp supporting segment.

4,282,561

AUTOMOBILE HEADLIGHT LIGHTING APPARATUS

Haruto Yano, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 1, 1979, Ser. No. 16,612
Claims priority, application Japan, Mar. 7, 1978, 53-29153[U]
Int. Cl.³ B60Q *1/06*
U.S. Cl. 362—65 **10 Claims**



1. In an automobile concealable headlight apparatus comprising at least one light unit including at least one lamp element and a concealing means operable to selectively conceal and expose the light unit, the improvement comprising:

a manually operable light switch means operatively connected electrically to said concealing means for providing electrical power to operate said concealing means to selectively conceal and expose the light unit and providing power to said at least one lamp element to illuminate said lamp element;

an additional manually operable switch means operatively connected electrically to said concealing means to selectively conceal and expose the light unit;

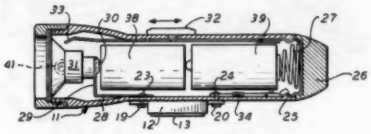
wherein the operation of said additional switch to expose the light unit is independent of the operation of said light switch.

4,282,562

COMBINATION RECHARGEABLE FLASHLIGHT AND CHARGER BASE

James Marino, R.D. #1, Box 192A, Asbury, N.J. 08802

Filed Oct. 29, 1979, Ser. No. 89,560
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—183 **7 Claims**



1. A combination rechargeable flashlight and flashlight battery recharger base comprising,

(a) a flashlight,

(b) a shaped enlargement thereon,

(c) a magnet on the shaped enlargement for affirmatively engaging the flashlight with a socket,

(d) a charger base,

(e) a shaped socket on the charger base,

(f) the shaped enlargement on the flashlight and the shaped socket in the charger base interfitting closely with each other,

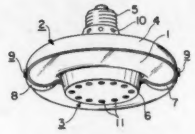
(g) a magnetic piece in the shaped socket magnetically engageable with the magnet on the enlargement when the enlargement and the socket are interfitted with each other.

4,282,563

FLUORESCENT LAMP UNIT

Shigenori Ohta, and Katsuyuki Hosoya, both of Ohme, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 18, 1979, Ser. No. 49,169
Claims priority, application Japan, Jun. 16, 1978, 53/72159
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—216 **15 Claims**



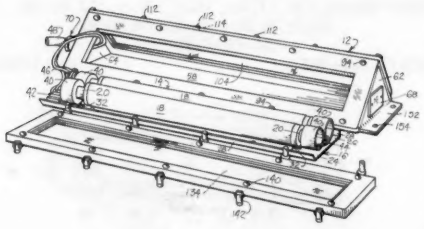
1. A fluorescent lamp unit comprising a circular fluorescent tube; an upper cover which overlies said circular fluorescent tube, which has, at one end, an edge cover member covering substantially an upper half surface of said circular fluorescent tube and which is provided with a screw base at the other end for insertion into threaded electrical sockets; a lower cover which underlies said circular fluorescent tube in a manner to oppose said upper cover and which comprises a protective cover member for covering a central portion of said upper cover surrounded by said fluorescent tube and holder members extending from said protective cover member to said edge cover member of said upper cover in order to partially support substantially a lower half surface of said circular fluorescent tube; and connection means for holding said upper cover and said lower cover in engagement.

4,282,564

TRIANGULAR ENCLOSURE FOR TUBULAR LIGHT SOURCE

Howard P. McJunkin Jr., Charleston, and Larry W. Rowley, Sissonville, both of W. Va., assignors to McJunkin Corporation, Charleston, W. Va.

Filed Jul. 24, 1978, Ser. No. 927,735
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—217 **8 Claims**



1. A triangular enclosure for a tubular light source, comprising:

a unitary housing of generally isosceles right triangular transverse cross-sectional shape, thus having two sides which meet along a common border at generally a 90° angle, and each of which has a respective outer border where it is joined to the respective outer edge of a base plate; said housing further including two opposed generally triangular end walls securely located at opposite ends of said sides and base plate;

gland fitting means being provided in one of said end walls for communicating an electrical cable through the housing to and from the inside of the housing;

means defining an aperture through each said side;

two light transmitting lenses;

means mounting a respective said lens covering each said aperture;

said mounting means in respect to one of said apertures removably mounting the lens to the respective side, in order to permit access to with the housing through the respective aperture

a light source mounting assembly which is insertable into said unitary housing and withdrawable therefrom, via said one aperture upon removal of said removably mounted lens, said light source mounting assembly comprising:

a tray having two axially spaced, transversally extending, upstanding webs secured thereon;

each web mounting at least one electrical socket provided in pairs of such sockets in axial alignment between the two webs;

terminal post means on the web;

electrical wiring from the respective electrical sockets to the terminal post means; and

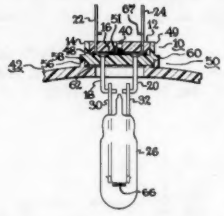
means for removably securing the tray to the housing for use when the light source mounting assembly is positioned within the housing.

4,282,565

SEALED, PREFOCUSED MOUNT FOR PLASTIC PAR LAMP

James M. Hanson, Euclid, and Irving Bradley, Novelty, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1979, Ser. No. 58,061
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **8 Claims**



1. In a prefocused light source mount for a reflector lamp to position the light source at the focus point of the reflector comprising at least two lead wires, at least two electrical connecting means joined one each to said lead wires, a plastic block having mating parts defining a cavity for receiving said joined lead wires, an elastomeric polymer in the cavity of said block, and a light source connected to the ends of said lead wires outside said block, the improved sealing means wherein the mating parts of said block comprise an inner container member defining said cavity and fitted into an outer housing member, said inner and outer members being sealed together after assembly to form a leak-proof enclosure, and with said cavity thereafter being filled with said elastomeric polymer to further provide a leak-proof seal around the lead wires.

4,282,566

SHOCK MOUNTING BRACKET FOR LAMP BULB

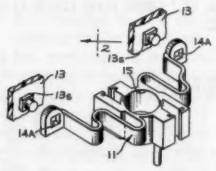
Charles J. Newman, Madison, Ind., assignor to The Grote Manufacturing Company, Inc., Madison, Ind.

Filed Apr. 16, 1979, Ser. No. 30,001
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—369 **10 Claims**

1. A novel bracket for shock mounting a bulb within a housing for a lamp, comprising:

a serpentine strip means for mounting said strip within the housing, said means for mounting comprising polygonal apertures provided at opposite ends of said strip and po-

lygonal fastener means extending through said aperture, said fastener means having a cross-sectional size and shape complementary to said apertures, said fastener means and said apertures constituting means for preventing pivoting



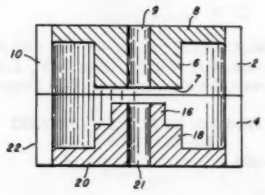
of said strip about said fastener means; and a bulb-receiving socket generally centrally located in said strip, with said socket having its radial center offset from a long central axis that extends between said apertures of said strip.

4,282,567

MODIFIED POWER TRANSFORMER FOR SELF-OSCILLATING CONVERTER REGULATOR POWER SUPPLY

William C. Voigt, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 735,341, Oct. 26, 1976, abandoned. This application Jun. 28, 1976, Ser. No. 920,106
Int. Cl.³ H02P *13/18;* H01F *17/04*
U.S. Cl. 363—15 **3 Claims**



1. In a self-oscillating switching regulator power supply of the type wherein an improved transformer alternately stores energy in a primary winding and then transfers energy into at least one secondary winding, the improved transformer having a ferromagnetic core comprising:

(a) a first ferromagnetic mass having a first face comprising a mesa; and

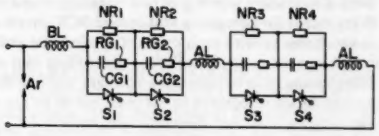
(b) a second ferromagnetic mass having a second face comprising a second mesa, the second face having a varied contour comprising a third mesa axially disposed on the second mesa, the first and second faces juxtaposed to provide an effective air gap therebetween, whereby a magnetic path passing through the core provides successive saturation varying inductance automatically in dependence on the current level in the windings and the contour of the second face, effectively limiting the frequency range.

4,282,568

ELECTRIC POWER CONVERTING APPARATUS

Sumio Kobayashi, Yokohama, and Tetsushi Matsushita, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Continuation-in-part of Ser. No. 872,008, Jan. 24, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,366
Claims priority, application Japan, Jan. 26, 1977, 52-7571
Int. Cl.³ H02H *7/125*
U.S. Cl. 363—54 **7 Claims**



1. An electric power converting apparatus comprising:

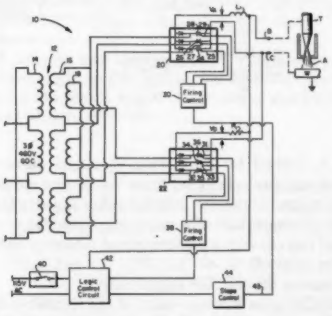
a plurality of parallelly connected branches, a plurality of linear reactors each connected in series with one of said branches, and a plurality of arrestors each connected in parallel with a series connection of a linear reactor and a branch, each branch including a plurality of serially connected semiconductor switching elements, a plurality of non-linear resistors each connected in parallel with one or more of said semiconductor switching elements, a voltage division element including a serially connected capacitor and resistor connected in parallel with each semiconductor switching element and anode reactors connected in series with said semiconductor switching elements, each of the non-linear resistors of a branch providing a limiting voltage, and the sum of the limiting voltages being lower than the protective level of an arrestor connected in parallel with a serially connected linear reactor and a branch.

4,282,569

CONSTANT CURRENT WELDING POWER SUPPLY WITH AN UPSLOPE STARTING CURRENT

Steven F. Hardwick, and Robert C. Fernicola, both of Florence, S.C., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 12, 1979, Ser. No. 56,966
Int. Cl.³ H02M *7/155;* B23K *9/06*
U.S. Cl. 363—87 **4 Claims**



1. A constant current SCR welding power supply in which current is supplied through SCR rectifier means to a welding load including an electrode to workpiece comprising:

a transformer having a primary winding adapted to be connected to a source of AC line voltage and a first and second secondary winding;

first DC power supply output means for providing across said welding load a high open circuit voltage at relatively low current, said first DC power output means including a first bridge rectifier having first SCR circuit means connected to said first secondary winding and first firing means for energizing said first SCR circuit means during each cycle of applied line voltage;

second DC power output means for providing an arc working voltage across said output welding load, said second DC power output means including a second bridge rectifier having second SCR circuit means connected to said second secondary winding of said transformer and second firing means for energizing said second SCR circuit means in synchronism with each cycle of applied line voltage;

constant current control means for controlling said second firing means so as to maintain a constant welding current;

detection means responsive to the presence of an arc across the welding load for disabling said second DC power supply output means until said arc is detected;

slope control means responsive to said detection means for applying a varying input signal to said constant current control means such that the current supplied by said second DC power output means is controllably increased from the detection of said arc at a predetermined rate until a predetermined level is reached; and

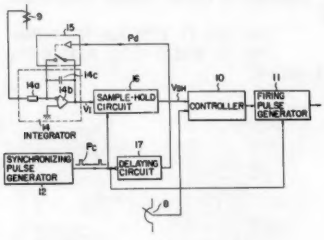
time delay means responsive to said detection means for disabling said first DC power supply output means after a predetermined time period following detection of an arc.

4,282,570

METHOD AND APPARATUS FOR CONTROLLING AN OUTPUT CURRENT OF A CONTROLLED RECTIFIER

Ryoichi Kurosawa, Tokyo, and Toshiaki Kudor, Inagi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Apr. 21, 1980, Ser. No. 142,458
Claims priority, application Japan, Apr. 26, 1979, 54-51620
Int. Cl.[3] H02P *13/26*
U.S. Cl. 363—87 **11 Claims**



1. A method for controlling an output current of a controlled rectifier connected to an AC power supply, by firing angle control of the controlled rectifier in accordance with the result of comparison of a value corresponding to the rectifier output current with a predetermined reference value, comprising the steps of:

detecting the rectifier output current,

calculating an average value of the rectifier output current over a period having a length equal to an integer multiple of the average period of the firing angle control,

comparing the average value of the rectifier output current with the reference value, and

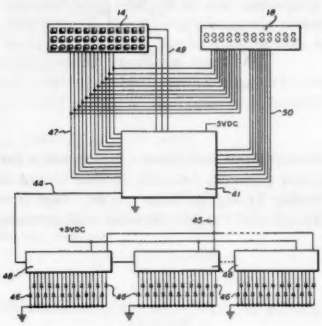
producing a signal for firing the controlled rectifier at an angle determined in accordance with the result of the comparison.

4,282,571

ELECTRONIC DISTANCE MEASUREMENT AND DISPLAYING APPARATUS

Joseph Giovannoli, 93 Wyckoff Ave., Waldwick, N.J. 07463, and Leon Charash, 240 Mt. Vernon Pl., Newark, N.J. 07106

Filed Jan. 22, 1979, Ser. No. 5,201
Int. Cl.[3] G01C *3/00*; G01B *11/02*
U.S. Cl. 364—562 **7 Claims**



1. An electronic measuring apparatus comparing:

(a) a plurality of light controlling elements arranged and spaced apart and forming a high density zone and a low density zone said high density zone and said low density zone being contiguous to one another with the high density zone having a greater number of light controlling elements than the low density zone per unit length;

(b) measuring means for energizing said light controlling elements in each of said zones respectivily to define the beginning and end of a distance to be measured;

(c) measuring input means providing selectability of at least one of said light controlling elements contiguous to the endpoint of the distance to be measured; and

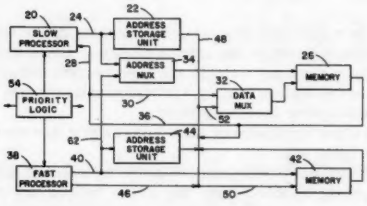
(d) electronic control means responsive to said measuring input means for controlling said measuring means and for generating electronic data which is a function of the distance to be measured.

4,282,572

MULTIPROCESSOR MEMORY ACCESS SYSTEM

Harry W. Moore, III, Watkins Glen, N.Y., and Steven M. Quack, Warsaw, Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 15, 1979, Ser. No. 3,692
Int. Cl.[3] G06F *15/16*
U.S. Cl. 364—200 **8 Claims**



1. A data processing system comprising:

a first memory unit;

a second memory unit;

a first processor having priority of access only to said first memory unit for writing data into said first memory unit;

a second processor having a higher operational speed than

said first processor for writing data simultaneously into said first and second memory unit;

priority selecting means for disabling said second processor from writing into said first memory unit in response to the occurrence of a write operation by said first processor after the start of a write operation by said second processor;

a first storage unit coupled to said second processor and operated in response to the occurrence of a write operation by said first processor to store the addresses of the data written into said second memory unit by said second processor, said storage unit outputting a control signal upon the storing of said addresses;

means coupled to said second processor for storing said control signal and operated by said second processor at the completion of the operation of said first processor to output said control signal to said second processor wherein said second processor is enabled to initiate a write operation in said first memory in response to receiving said control signal;

and switchng means coupled between said first and second memory units and operated by said priority selecting means enabling said second processor to transfer the data written into the second memory unit by said second processor into said first memory unit and the data written into said first memory unit by said first processor into said second memory unit thereby balancing the data stored in said first and second memory unit.

4,282,573

PROCESSOR INTERRUPT DEVICE FOR AN ELECTRONIC ENGINE CONTROL APPARATUS

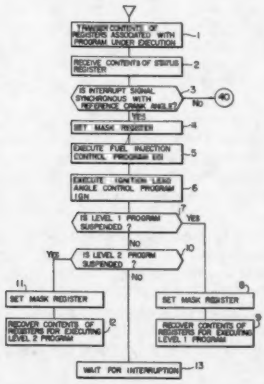
Masumi Imai; Kotaro Hirasawa, both of Hitachi; Seijo Suda, Mito, and Yukio Kawamoto, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,533

Claims priority, application Japan, Oct. 19, 1977, 52-125974

Int. Cl.³ G06F *15/20*; G05B *15/02*; F02P *5/04*

U.S. Cl. 364—431 **31 Claims**



1. For use in a processor-controlled apparatus for controlling the operation of an internal combustion engine for which sensor means monitor operating conditions of the engine and produce output signals representative thereof and having actuator means for controlling respective energy conversion functions of the engine in response to control signals applied thereto; and having output control signal generating means, responsive to processor-generated signals for generating control signals to be applied to said actuator means;

a control apparatus comprising, in combination:

a status register for storing interrupt data to be coupled to said processor, in response to which said processor selectively initiates the carrying out of prescribed data processing operations,

a mask register, adapted to be coupled to said processor for storing interrupt inhibiting data selectively coupled thereto from said processor,

means, coupled to said status register and to said mask register, for producing at least one interrupt signal in accordance with the data stored in said status and mask register; and

means, coupled to said status register, for selectively controlling the value of interrupt data stored by said status register and thereby the production of said at least one interrupt signal.

4,282,574

APPARATUS FOR INITIALIZING A VEHICLE CONTROLLING DIGITAL COMPUTER

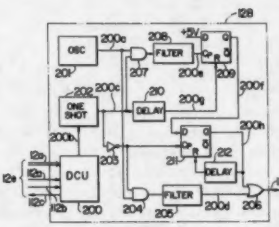
Matuju Yoshida, Bisai, and Shukichi Hayashi, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 7, 1978, Ser. No. 967,498

Claims priority, application Japan, Jan. 19, 1978, 53-4871

Int. Cl.³ H03K *5/13*; G06F *15/20*

U.S. Cl. 364—431 **4 Claims**



1. An apparatus for initializing a digital computer mounted on an automotive vehicle and programmed to repetitively perform calculations required for said vehicle according to preestablished calculation sequences, said apparatus comprising:

means for electronically producing periodic pulses at a fixed frequency;

means for producing a prevention output indicative of at least one of said preestablished calculation sequences being performed; and

means, responsive to said periodic pulses, for causing said digital computer to be initialized, said causing means including means for generating computer initializing signals, means for applying said initialization signals to an initialization input of said computer, and

means for delaying said periodic pulses in response to said prevention output so that said digital computer is initialized after performance of said at least one of said preestablished calculation sequences.

4,282,575

CONTROL SYSTEM FOR VENDING MACHINE

William R. Hoskinson, Elburn, and William V. Machanian, DeKalb, both of Ill., assignors to The Wurlitzer Company, DeKalb, Ill.

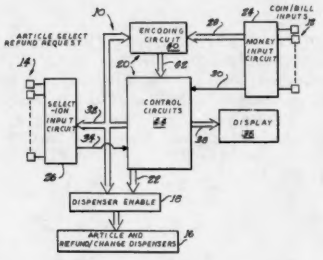
Filed Aug. 10, 1979, Ser. No. 65,611

Int. Cl.³ G06F *15/20*; G07F *17/00*

U.S. Cl. 364—479 **17 Claims**

1. In a vending machine or the like having a plurality of money accepting means each for accepting a monetary unit of a different denomination, means for selecting articles to be vended and for requesting refunds, and means for dispensing the selected articles and for dispensing refunds, a conrol system comprising: money input circuit means coupled to said money accepting means and responsive to each acceptance of a mone-

tary unit for producing a monetary unit input signal corresponding to the acceptance of said monetary unit, selection input circuit means coupled to said article selecting means and to said refund requesting means and responsive both to selection of each article and to each refund request for producing a corresponding selection and refund request input signal indicating either that an article has been selected or a refund requested, encoding circuit means responsive respectively to said monetary input circuit means and to said selection input circuit means for producing respective encoded signals representing respectively the values of the monetary units accepted and the prices of articles selected, control circuit means responsive to



said monetary unit input signal, to said encoded signals and to said selection and request input signal for identifying each article selected or refund requested, for determining the amount of credit initially available or remaining for selection of a first article or further articles or for refund and for producing a plurality of control signals and circuit means interposed between said control circuit means and said dispensing means and responsive to said control signals for dispensing as many articles as selected and for dispensing requested refunds so long as said initial or remaining credit is sufficient, and wherein said control circuit means comprises a special purpose computer.

4,282,576

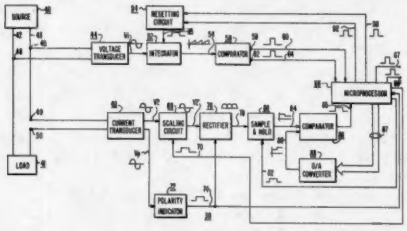
INDICATOR DIAGRAM BASED AC ELECTRIC ENERGY METER

Robert T. Elms, Monroeville, and Leonard C. Vercellotti, Oakmont, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 41,446, May 22, 1979, abandoned. This application Feb. 8, 1980, Ser. No. 119,686

Int. Cl.[3] G01R *21/06*

U.S. Cl. 364—483 **21 Claims**



1. A meter apparatus computing the area of an indicator diagram for determining the value of an AC electric energy quantity defined by a voltage and a current component, comprising:

input means for producing a first input signal representative of said voltage component;

means for integrating said first input signal for producing an integral signal;

means for comparing the instantaneous magnitude of said integral signal to the magnitude of fixed and predetermined reference potentials;

processing means for producing, in response to said means for comparing, signals composed of variable width pulses;

a constant current source for resetting, in response to said width of said pulses of said signals, said means for integrating;

a second input means producing a second input signal representative of said current component;

means for sampling, in response to said pulses of said signals, said second input signal for producing sample values, said sample values input to said processing means, said processing means accumulating successive sample values thereby producing totalized values representative of the time integral of the product of said current component times the time integral of said voltage component, said processing means further producing, in response to said totalized values, an output signal representative of said AC electric energy quantity.

4,282,577

PROCESS AND APPARATUS FOR AUTOMATICALLY ADJUSTING ULTRASONIC TEST HEADS

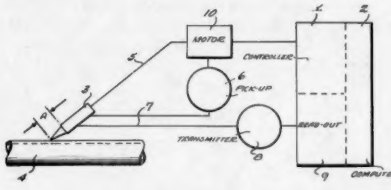
Klaus Abend, AM Kirschberg 1, 6470 Budingen, and Raimund Lang, Friedensstrasse 29, 8755 Wasserlos, both of Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,786

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828273

Int. Cl.[3] G01N *29/04;* **G06F** *15/46*

U.S. Cl. 364—507 **5 Claims**



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1. An apparatus for regulating the angle of inclination and the focus distance of an ultrasonic test head in relation to a test piece of a device for the non-destructive testing of a work piece comprising in combination:

a test head;

a computer for executing a test program, said computer providing an instruction signal for controlling the angle of inclination and focus distance of the head;

a step motor coupled to said computer and adapted to receive an instruction signal therefrom,

a first absolutely coded angular transmitter connected to the test head via the stepping motor for indicating the actual position of the test head, and

a second absolutely coded angular transmitter, mechanically independent from the first angular transmitter, for controlling the position of the test head.

4,282,578

SYSTEM FOR LINEARIZING NON-LINEAR TRANSDUCER SIGNALS

F. Leland Payne, and Jeffrey L. Taylor, both of Tucson, Ariz., assignors to Burr-Brown Research Corporation, Tucson, Ariz.

Filed Mar. 17, 1980, Ser. No. 131,031

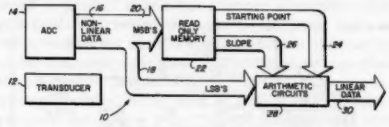
Int. Cl.[3] G06F *15/353*

U.S. Cl. 364—573 **10 Claims**

1. A system for linearizing unlinearized data in the form of a

plurality of unlinearized data words, including a first unlinearized data word, to product linearized data in the form of a plurality of linearized data words, said first unlinearized data word including first and second groups of bits, said system comprising in combination:

a. memory means for storing a plurality of words, including a first stored word, said first stored word including first and second groups of bits, said memory means being responsive to said first group of bits of said first unlinearized data word to effect accessing of said first stored word;



b. multiplier means for multiplying said second group of bits of said first unlinearized data word by said second group of bits of said first stored word to produce a first product word; and

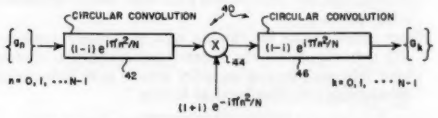
c. summing means for algebraically summing a predetermined number of bits of said first product word with said first group of bits of said first stored word to produce a first one of said linearized data words.

4,282,579

DISCRETE FOURIER TRANSFORM SYSTEM USING THE DUAL CHIRP-Z TRANSFORM

Jeffrey M. Speiser, and Harper J. Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1979, Ser. No. 86,967
Int. Cl.[3] G06F *15/332*; G06G *7/12*
U.S. Cl. 364—726 **7 Claims**



NOTE: THE EMBODIMENT MAY BE SIMPLIFIED BY NOTING THAT
(a) $(1+i)(1-i)=2$ and (b) $(p+iq)(1-i)=(p+q)+i(q-p)$

DUAL CZT of FIG. 2B, WITH THE VARIOUS PARAMETERS SPECIFIED.

1. A system for performing the discrete Fourier transform (DFT) of a discrete input signal g_n, $n=0, 1, \ldots, N-1$, where N is an even integer, using the dual chirp-Z transform, comprising:

an input means for circularly convolving the input signal g_n with a reference function $(1-i)\,e^{i\pi n^2/N}$;

means for generating the chirp signal $(1+i)\times e^{-i\pi n^2/N}$; and

means for multiplying the output signal from the input means for circularly convolving and the output signal from the means for generating the signal $(1+i)\times e^{-\pi n^2/N}$; and

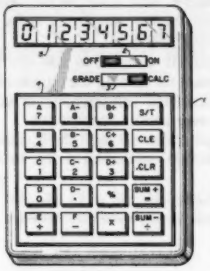
an output means, whose input is connected to the output of the multiplying means, for circularly convolving its input signal with the reference function $(1-i)\,e^{i\pi n^2/N}$, the output signal of the output means for circularly convolving being the signal G_k, $k=0, 1, \ldots, N-1$, G_k being proportional to the discrete Fourier transform of the input signal g_n.

4,282,580

POCKET CALCULATOR WITH GRADE AVERAGING FUNCTION

Susan McGuire, 8170 La Riviera Dr., Sacramento, Calif. 95825, and Michael Cannon, 1440 29th Ave., Oakland, Calif. 94601

Filed Sep. 10, 1979, Ser. No. 73,868
Int. Cl.[3] G06F *15/02, 15/20*
U.S. Cl. 364—734 **11 Claims**



1. An electronic calculator comprising:

a. a microprocessor for processing digital input information and generating digital output information, and for controlling the operation of the calculator,

b. a keyboard having a plurality of grade keys, one key for each letter grade, all connected to said microprocessor,

c. visual display means connected to said microprocessor for reading digital output information generated by said microprocessor, and

d. a power supply for furnishing electrical power to operate said microprocessor, input means and visual display means,

said microprocessor including registers for performing two separate totals of results,

such that when a particular grade key is manually stroked, the particular grade of that key is both displayed on the visual display, and entered into each register for accumulation in each total result; and

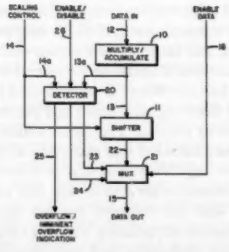
switch means connected to said visual display means for switching back and forth between the two results to be displayed on the display at any point in time.

4,282,581

AUTOMATIC OVERFLOW/IMMINENT OVERFLOW DETECTOR

David W. Bondurant, Eden Prairie, and Richard J. Martin, Rosemount, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 15, 1979, Ser. No. 85,165
Int. Cl.[3] G06F *11/00*
U.S. Cl. 364—737 **4 Claims**



1. In a digital processor, having an arithmetic unit, and

having means for supplying a scale factor for scaling a resultant produced by said arithmetic unit, an apparatus for post-scaling said resultant comprising:

a shifter means responsively coupled to said arithmetic unit and said supplying means for shifting said resultant a number of radix places corresponding to said scale factor supplied by said supplying means;

a detector means responsively coupled to said supplying means and said arithmetic unit for generating an overflow signal whenever said scale factor causes said shifter to shift said resultant a number of radix places causing an overflow condition; and

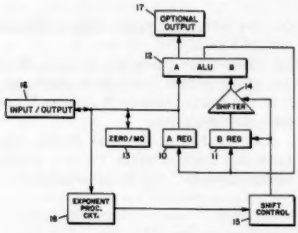
means responsively coupled to said shifter means and said detector means for forcing the output of said shifter means to a predetermined value whenever said detector means detects an overflow condition.

4,282,582

FLOATING POINT PROCESSOR ARCHITECTURE WHICH PERFORMS SUBTRACTION WITH REDUCED NUMBER OF GUARD BITS

Wilson T. Wong, Anaheim, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jun. 4, 1979, Ser. No. 45,218
Int. Cl.[3] G06F *7/50*
U.S. Cl. 364—748 **18 Claims**



1. A floating point processor circuit for operating an floating point numbers each of which comprises an exponent and a number, comprising:

first register means for storing a first number;

second register means for storing a second number;

third register means for storing a third number;

arithmetic logic means, the outputs of said arithmetic logic means connected to the inputs of at least two of said first, second and third register means, the inputs of said arithmetic logic means connected to the outputs of each of said first, second and third register means such that said arithmetic logic means is operative for selectively receiving the respective number stored in any selected two of said first, second and third register means and performing an operation thereon to produce a resultant number and returning the resultant number of said operation to said first register means for storage therein as said first number, and

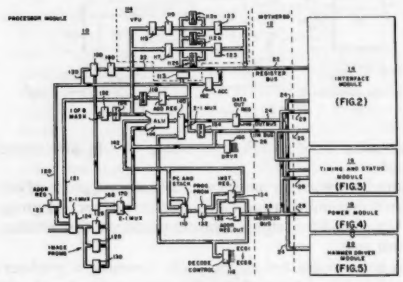
shift control means connected to said first register means to selectively shift the resultant number stored in said first register means in accordance with the difference between the exponents associated with said first and second numbers.

4,282,583

MICROPROGRAMMABLE PROCESSOR CONTROL PRINTER SYSTEM

Sultan W. Khan, Westlake; John K. Ham, Simi, and Richard A. Strissel, Simi Valley, all of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Division of Ser. No. 805,527, Jun. 10, 1977, Pat. No. 4,179,732.
This application May 7, 1979, Ser. No. 36,822
Int. Cl.[3] G06F *3/00, 3/12*
U.S. Cl. 364—900 **12 Claims**



1. A printer of the type used to print data from an external data source onto a printing medium, said printer having stepper means for vertically advancing the medium, said printer including a processor controlled vertical format unit comprising:

format memory means for receiving momentary input signals and storing information from the input signals establishing a first vertical format for printing onto said medium,

vertical advance control means, connected to said stepper means and to said format memory means, for accessing the first vertical format information from said format memory one or more times and for causing said stepper means to advance said medium vertically by a distance established by said accessed information each time the information is accessed, and

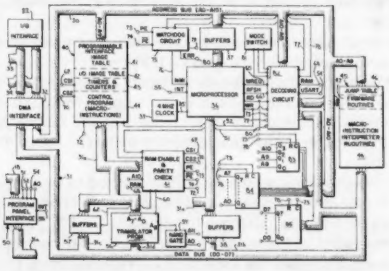
direct access means for causing new momentary input signals to be supplied to the format memory means to thereby load into said format memory means new information establishing a second vertical format.

4,282,584

MINI-PROGRAMMABLE CONTROLLER

Ronald A. Brown, Willowick; Sung C. Hu, Lyndhurst, and Odo J. Struger, Chagrin Falls, all of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 30, 1979, Ser. No. 43,897
Int. Cl.[3] G05B *19/02*; G06F *11/00*
U.S. Cl. 364—900 **17 Claims**



1. An improved digital controller of the type having an I/O

interface for connection to a plurality of control devices, a first memory means that stores operands of status data, and means electrically connected between the first memory means and the I/O interface for coupling the status data therebetween to monitor and control the I/O devices, wherein the improvement comprises:

second memory means for storing a group of bit-oriented program instructions, each instruction from the group including a group operation code, a selected bit pointer code, and the address of a selected operand;

third memory means for storing machine instructions organized in a set of interpreter routines associated with the group of bit-oriented program instructions, each interpreter routine for performing an operation directed by the group operation code on a bit of operand data specified by the selected bit pointer code, the third memory means also storing machine instructions to couple each bit-oriented program instruction to its respective interpreter routine; and

processor means coupled to the first, second and third memory means, and responsive to the machine coupling instructions in the third memory means, to read a bit-oriented program instruction from the second memory means and to execute a respective interpreter routine in the third memory means according to the bit pointer code of the program instruction, to read the selected operand from the first memory means and to manipulate a bit of data in the selected operand.

4,282,585

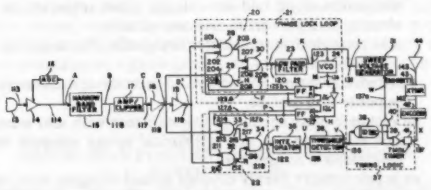
SITE OCCUPANCY DETECTOR

Steve F. Torok, Southampton; Vincent A. Formica, Holland, and George P. Lange, Churchville, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 25, 1973, Ser. No. 408,970

Int. Cl.³ H04B *1/59*

U.S. Cl. 367—2 **7 Claims**



1. A system for detecting and indicating an acoustic energy source comprising, in combination:

detection means adapted to receive acoustic energy for providing a signal indicative thereof;

first filter means operatively connected to said detection means for receiving the detection means signal and passing a signal within a predetermined frequency range indicative of the energy source;

signal processing means operatively connected to receive the first filter means signal for acquiring and continuously tracking the filter means signal within the predetermined frequency range and producing a signal indicative of tracking;

timing logic means connected to receive the signal processing means signal for selectively providing a first output signal indicative of the received signal for a first predetermined duration with interruptions not exceeding a second predetermined duration, and a second output signal indicative of an interruption in the received signal exceeding the second predetermined duration within the first predetermined duration, wherein said timing logic means includes,

delay means connected to receive the signal processing means signal for providing a signal indicative thereof after the second predetermined duration;

first and second gating means each having a first input connected to receive the delay means signal and a second input connected to receive the signal processing means signal, each providing a respective output signal when either of the input signals are present, the second gating means signal being the timing logic means second output signal; and

timing means connected to receive the first gating means signal for providing an output signal after the first predetermined duration, the timing means output signal being the timing logic means first output signal.

4,282,586

DOPPLER LOG

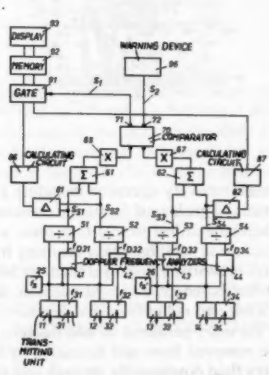
Horst Helms, Bremen, Fed. Rep. Germany, assignor to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Dec. 28, 1979, Ser. No. 108,167

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1979, 2901293

Int. Cl.³ G01S *15/88*

U.S. Cl. 367—13 **3 Claims**



1. In a Doppler log for a vehicle equipped with transmitting and receiving units associated with two mutually transverse measuring axes which are parallel to a plane defined by the longitudinal and transverse axes of the vehicle, for the emission of directed beams of sound energy in directions which extend along the measuring axes, each beam being inclined with respect to the plane by a known emission angle such that all of the beams are symmetrical to the normal to the measuring axes, the transmitting units operating at selected, known transmitting frequencies, and each receiving unit being connected for receiving the reflected components of the sound energy from a respective emission direction, the log further including a Doppler frequency analyzer connected to the output of each receiving unit for producing a representation of the Doppler frequency component of the sound signal received by that receiving unit, and a ratio former connected to the output of each analyzer and the associated transmitting and receiving unit for producing an output signal representing the quotient of the respective Doppler frequency with the corresponding transmitting frequency, the improvement comprising: summing means connected to said units for forming representations of the sum of the ratio former output signals associated with each measuring axis; multiplying means connected to said summing means for multiplying each sum representation by a representation of the cosecant of the associated emission angle; and testing means connected to said multiplying means for comparing the multiplication results and emitting a signal

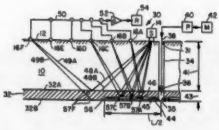
indicating proper Doppler log operation whenever such multiplication results are substantially identical.

4,282,587

METHOD FOR MONITORING THE RECOVERY OF MINERALS FROM SHALLOW GEOLOGICAL FORMATIONS

Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105

Filed May 21, 1979, Ser. No. 41,061
Int. Cl.[3] G01V *1/28*
U.S. Cl. 367—37 26 Claims



1. In a mineral recovery operation including a shallow substantially horizontal geological formation containing said minerals a first borehole drilled to said formation, a substantially horizontal fracture in said formation resulting from the prior application of pressurized fracture fluid to said formation through said first borehole, a second borehole drilled to said formation at a selected radius from said first borehole less than the radius of the outer perimeter of said fracture, said mineral adapted to be removed from said formation by flowing a selected recovery fluid downwardly through said first borehole, outwardly through said fracture to said second borehole and upwardly to the surface; where said minerals are recovered; the method of mapping at a plurality of points at different radii, the shape and size of the zone in said formation, surrounding said first borehole, from which said mineral has been removed after said recovery fluid has been flowing for a first selected time interval T1, comprising the steps of;

(a) providing a first source of seismic waves at or near the surface at at least one point above said fracture;

(b) positioning at or near the surface of the earth a plurality of seismic sensors, such as geophones, at selected known positions, said sensors adapted to receive the upward reflection of downwardly directed seismic waves generated by said source, and to convert them to electrical signals;

(c) pressurizing said previously prepared fracture with a selected pressurizing fluid to a condition P, where the overburden is lifted and the roof of said fracture is out of contact with the base of said fracture, and at least a thin layer of said pressurizing fluid fills said fracture and said cavity;

(d) operating said first source and receiving said seismic waves reflected from the roof of said fracture and said zone and recording a first electrical signal from each of said sensors; and

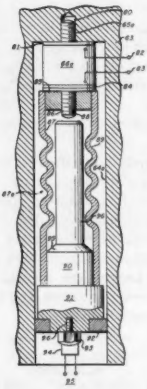
(e) comparing said first electrical signal from at least two of said sensors.

4,282,588

RESONANT ACOUSTIC TRANSDUCER AND DRIVER SYSTEM FOR A WELL DRILLING STRING COMMUNICATION SYSTEM

Gary J. Chanson, Weston, and Alexander M. Nicolson, Concord, both of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 114,040
Int. Cl.[3] G01V *1/40*
U.S. Cl. 367—82 8 Claims



1. A system for the acoustic propagation of a data bearing carrier signal along a bore-hole drilling string including coupled hollow pipe sections, at least one of said hollow pipe sections having a first axis and a closed cavity in the wall thereof, said closed cavity having a second axis parallel to and offset from said first axis, said system comprising:

a piezoelectric transmitter adapted for compression and elongation along said second axis when subjected to an electric field parallel to said second axis,

said piezoelectric transmitter being affixed to a surface of said closed cavity,

a cylindrical spring affixed to said piezoelectric transmitter opposite said surface,

an elongate mass having an axis collinear with said second axis and affixed to said cylindrical spring opposite said piezoelectric transmitter,

an accelerometer fixedly coupled to said elongate mass, and

an amplifier responsive to said accelerometer for driving said piezoelectric transmitter.

4,282,589

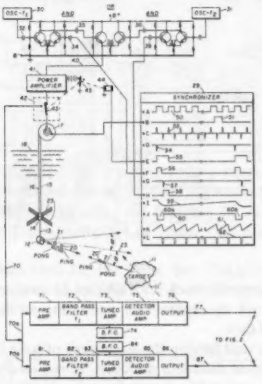
CORRELATION RANGING

Samuel G. Evetts, Dallas; John D. Lawson, Carrollton, and William D. Penn, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 16, 1961, Ser. No. 153,780
Int. Cl.[3] G01S *15/58*
U.S. Cl. 367—90 6 Claims

1. In sonic ranging the method which comprises transmitting a first sonic pulse having a predominant frequency in the upper sonic range, transmitting a second sonic pulse after a time delay substantially less than the length of said first sonic pulse where said second sonic pulse has a frequency in the upper sonic range but substantially different than the frequency of said first sonic pulse, separately sensing the return echoes of the sonic pulses in two frequency bands to produce a pair of received signals, a first of which includes components representative of echoes of said first sonic pulse and the second of which includes components representative of echoes of said second sonic pulse with the frequencies of the echo components modified relative to the frequencies of said sonic pulses in

dependence upon the relative velocities between the point of transmission thereof and the object producing echoes, separately recording said pair of received signals, reproducing the recorded signals to generate a pair of high frequency signals respectively representative of the first and second received signals with the fist high frequency signal shifted in time relative to the second high frequency signal by an amount representative of said time delay to bring like components thereof into time coincidence, generating a timing function which varies monotonically from a predetermined level occurring in known time relative to the instant of transmission of the second



of said sonic pulses, generating a pair of reference signals which vary in frequency in dependence upon said timing function, separately mixing said reference signals and the first and second of said high frequency signals to produce side band components, filtering said side band components to generate a pair of output signals of narrow band width centered at frequencies respectively representative of the frequencies of said sonic pulses, separately detecting said output signals to produce a pair of demodulated signals, and from the product of said demodulated signals generating a signal appearing along a time scale dependent upon said timing function.

4,282,590

ADJUSTABLE POSITION SONAR TRANSDUCER DEPTH FINDER

Kenneth G. Wingate, 1027 Algonquin Trail, Frankfort, Ky. 40601

Filed Aug. 13, 1979, Ser. No. 66,473
Int. Cl.[3] H04R 1/44
U.S. Cl. 367—104 **9 Claims**

1. An electronic depth finder apparatus for use in a fluid medium including a combined impulse control means and read-out as well as a remote cooperating transducer that is joined by connecting means therebetween, said apparatus comprising:

a. fixed mounting means for assembling the apparatus to a supporting structure;

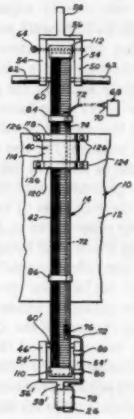
b. a vertical shaft adjustably mounted to the said fixed mounting means both vertically and rotationally;

c. a first movable support lever pivoted to the bottom portion of the said shaft and capable of movement in a vertical plane through a wide angle, whereby a transducer may be mounted solely to this first support lever for transmitting and receiving controlled sound wave energy at a variety of directional angles with respect to the shaft as well as at a variety of vertical elevations relative to the said fixed mounting means;

d. a second movable operating lever pivoted to the top portion of the said shaft and capable of movement in a vertical plane through a wide angle;

e. the said shaft including motion transmitting means internally of the shaft for joining the top and bottom levers so that the two levers generally move in unison;

f. whereby the transducer is capable of at least two out of a possible three planes of movement; first, angular movement in a vertical plane along with the movement of the



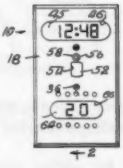
bottom support lever relative to the shaft; second, unlimited rotational movement in a horizontal plane about the longitudinal axis of the shaft as the shaft is turned; and third, vertical elevational movement due to the vertical movement of the shaft relative to the said fixed mounting means.

4,282,591

LIGHT CONTROL AND INDICATING DEVICE

Ilio A. Andreuccetti, 216 E. Grantley Ave., Elmhurst, Ill. 60126

Filed Mar. 22, 1979, Ser. No. 22,695
Int. Cl.[3] G04B 47/06; G01K 13/00
U.S. Cl. 368—10 **3 Claims**



1. A unitary and self-contained device, for mounting in a cavity in the wall of a subject room, the wall having a surface exposed to the room and the cavity opening through that wall surface to the room substantially through its own full transverse area, and the wall having an interior structure defining the surface of the cavity, and the cavity being dimensioned and constructed for mounting therein of a conventional light switch, said device comprising,

a main component and a cover plate,

the main component including,

(a) a frame forming a box extending into and positioned in the cavity and including lugs fitted to the wall adjacent said exposed surface and secured to the wall,

(b) a plurality of sub-components mounted in said frame, the sub-components including,

(1) a light switch having a manually actuating element

disposed closely adjacent the plane of said exposed surface of the wall,

(2) a block disposing the cavity, composed of heat insulating material continuously on all sides except an open front side, forming a cell opening through said open front side, the block being positioned with its open front side closely adjacent the plane of said exposed surface of the wall, a thermometer in the cell with a sensing element extending into and disposed entirely in the cell and a visual indicating element disposed closely adjacent the plane of said surface of the wall, the cover plate having apertures communicating with the cell at vertically spaced positions respectively adjacent the top and bottom of the cell to enable flow of air from the room through the cell in sensing engagement with the sensing element and to facilitate the free flow of such air,

the cover plate being mounted to said frame over the cavity and secured to the frame, and being flat and essentially of planar form and lying close to said surface of the wall and blending into that surface, the cover plate having openings receiving the actuating element of the light switch, and the indicating element of the thermometer, and those elements thereby being exposed through those openings, and the elements substantially filling those openings and terminating closely adjacent the outer surface of the cover plate, the cover plate, except for said apertures, otherwise completely covering the cavity.

4,282,592

INDICATING MEMBER ADVANCING MECHANISM

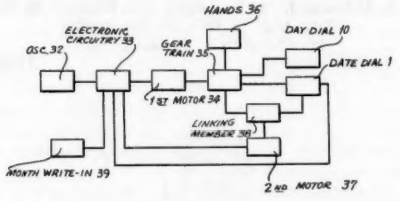
Mamoru Miyasaka, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,687

Claims priority, application Japan, Mar. 30, 1978, 53-37111

Int. Cl.³ G04B *19/24, 19/20, 27/00, 19/00*

U.S. Cl. 368—37 **24 Claims**



1. An electronic analog timepiece comprising:

electronic circuitry including means for providing timekeeping signals;

analog display means for visibly indicating timekeeping functions;

electro-mechanical means operating in response to said timekeeping signals to advance said analog display means, whereby visible indicia of said timekeeping functions are changed at regular prescribed intervals, said electro-mechanical means including first motor-means for advancing said display means at said regular intervals;

means for enabling the change of at least one of said timekeeping functions at an irregular interval, said means for enabling including second motor means and linking means, means for actuation of said second motor means, actuation of said second motor means causing said linking means to engage with said electro-mechanical means, said engagement enabling the change of said at least one timekeeping function, said first motor means changing said at least one timekeeping function whenever said linking means are engaged.

4,282,593

ELECTRONIC CLOCK CIRCUITRY FOR A CLOCK HAVING CHIMES OR AN ALARM

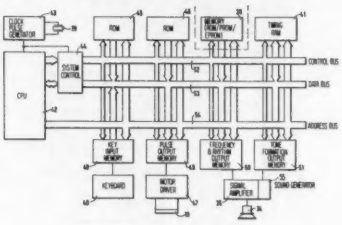
Hans Flaig, Schramberg; Jurgen Allgaier, Lauterback, and Friedrich Assmus, Schramberg, all of Fed. Rep. of Germany, assignors to Gebruder Junghans, GmbH, Schramberg, Fed. Rep. of Germany

Filed May 15, 1979, Ser. No. 39,135

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821660

Int. Cl.³ G04B *21/08;* **G04C** *21/14*

U.S. Cl. 368—63 **9 Claims**



1. An electronic clock with chimes or an alarm, comprising:

a clockwork mechanism for providing an indication of the time of day;

a memory unit having the sequences of tone frequencies of a plurality of different melodies stored in digital form;

manually actuatable means for selecting one of said stored melodies and the time of day the selected melody is to be played;

program control means for controlling the operation of said clockwork mechanism and for reading the information relating to the sequence of tone frequencies of the selected melody from said memory unit at the selected time of day; and

an electro-acoustic transducer for transforming the information read from said memory unit into an audible melody.

4,282,594

ELECTRONIC TIMEPIECE

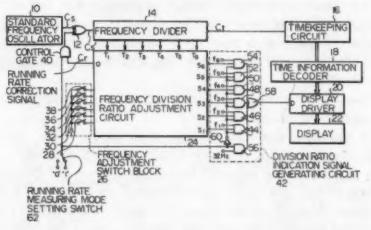
Singo Ichikawa, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 99,881

Claims priority, application Japan, Dec. 27, 1978, 53-160064; Jan. 8, 1979, 54-1163

Int. Cl.³ G04C *19/00;* **G04B** *17/12*

U.S. Cl. 368—82 **7 Claims**



1. An electronic timepiece having a source of a standard frequency signal, a frequency divider circuit for dividing the frequency of said standard frequency signal to provide a unit time signal, timekeeping means responsive to said unit time signal for producing time information, display means for displaying said time information, and means for controlling the effective frequency division ratio of said frequency divider by

aperiodic frequency algebraical addition of a running rate correction signal to said standard frequency signal, the improvement comprising:

mode setting means for selectively setting said electronic timepiece in a normal timekeeping mode in which said aperiodic frequency algebraical addition is performed and in a running rate measuring mode in which said aperiodic frequency algebraical addition in inhibited; and

circuit means for generating an electrical signal in said running rate measuring mode indicative of said effective frequency division ratio of the frequency divider in said normal timekeeping mode.

4,282,595

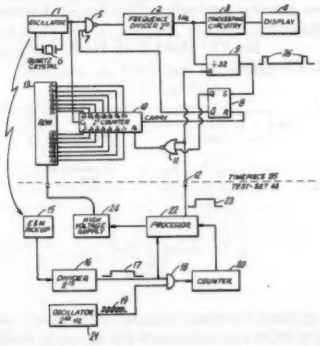
METHOD FOR DIGITAL FREQUENCY TRIMMING AN OSCILLATOR IN AN ELECTRONIC TIMEPIECE

John Lowdenslager, Norwalk, and Norman C. Zatsky, Southbury, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Dec. 21, 1979, Ser. No. 106,173

Int. Cl.³ G04B *17/12, 17/00*

U.S. Cl. 368—200 **5 Claims**



1. A method for trimming the frequency of a piezoelectric crystal oscillator in a timepiece having a count-down circuit coupled to the oscillator to receive an input signal therefrom and provide a lower frequency output signal, time indicating means coupled to the count-down circuit to be activated thereby, the piezoelectric crystal oscillator having a nominal frequency above a desired frequency, and an inhibit circuit means to periodically start blocking of oscillator pulses and preset a counter to a first count number stored in a nonvolatile memory circuit, said counter being responsive to the output of the oscillator for increasing the count preset therein to a second predetermined count, said inhibit circuit means stopping the blocking of oscillator pulses in response to the second predetermined count of said counter,

wherein said first count number is determined and written into said nonvolatile memory circuit, including the steps of:

detecting signals externally indicating untrimmed oscillator frequency generated by the untrimmed oscillator;

determining the first count number such that the difference count between the first and second count equals the frequency difference between the untrimmed oscillator and the desired frequency;

permanently writing the first count into said memory circuit.

4,282,596

ALARM CLOCK CASE SHUT-OFF DEVICE

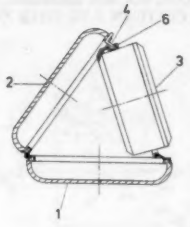
Roland Siefert, Bad Durrheim, and Roland Sauter, Schwenningen, both of Fed. Rep. of Germany, assignors to Kienzle Uhrenfabriken GmbH, Schwenningen, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 117,995

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1979, 7903198[U]

Int. Cl.³ G04B *23/00*

U.S. Cl. 368—262 **3 Claims**



1. A switching off apparatus for an alarm clock including a casing having a rear wall, comprising a slide which projects beyond the upper contour of the clock in one position in which the alarm is operated, a switching off mechanism associated with the slide and operated when pressure is exerted on the slide, a guide recess in the slide for engaging a portion of said rear wall, a part of the inner wall of the guide recess forming a resilient hook, a locking member on said portion of the rear wall, the hook and locking member cooperating to define said one and a second position of said slide.

4,282,597

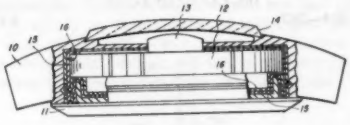
METAL-COATED PLASTIC HOUSING FOR ELECTRONIC COMPONENTS AND THE METHOD OF MAKING SAME

David L. Yenawine, Richardson; Richard K. Lowder, Carrollton; Delwin L. Power, Howe, and Tommy L. Summers, Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 28, 1977, Ser. No. 855,513

Int. Cl.³ G04B *37/00;* **G02G** *13/08*

U.S. Cl. 368—280 **12 Claims**

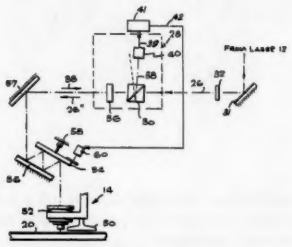


1. A plastic container for an electronic component, said container including an interior floor surface and at least one interior wall surface upstanding from said floor surface, each of said interior floor surface and said interior wall surface having a continuous metallic coating thereon comprising a relatively thick layer of a first conductive metal next adjacent to said surface, said relatively thick layer of conductive metal grading into a relatively thin overlayer of a second corrosion resistant metal.

4,282,598
VIDEO DISC READ BACK SCANNER

James E. Elliott, San Pedro, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 812,180, Feb. 1, 1977, abandoned, which is a continuation of Ser. No. 662,238, Feb. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 465,823, May 1, 1974, Pat. No. 3,944,727, which is a division of Ser. No. 299,893, Oct. 24, 1972, Pat. No. 3,829,622. This application Jul. 14, 1978, Ser. No. 924,538
The portion of the term of this patent subsequent to Mar. 16, 1993, has been disclaimed.
Int. Cl.[3] H04N *5/76*; G11B *7/00*
U.S. Cl. 369—44 7 Claims



1. A method of controlling a radiant beam in an apparatus for optically reading information from a plurality of substantially concentric information tracks formed in a rotating disc-shaped information storage medium, said apparatus including radiant beam means for producing a source beam of radiant energy and transducer means for receiving a modulated beam of radiant energy produced by impinging said source beam at a selected location upon said storage medium, said method comprising the steps of:

steering said source beam in a radial direction relative to said storage medium to said selected location for following said information tracks;

monitoring the radial location of said source beam relative to said storage medium, and providing a control signal indicative of radial deviations in the location of said source beam from a precisely defined path;

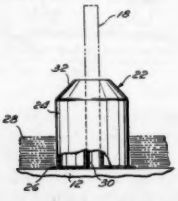
shifting the phase of said control signal by an amount equal to one-quarter revolution of said storage medium; and

moving said source beam in a tangential direction relative to said storage medium to said selected location under the control of said phase-shifted control signal.

4,282,599
PHONOGRAPHIC RECORD SPINDLE ADAPTOR

Antonio M. Lopez, 420 S. Jordan, Ventura, Calif. 93003

Filed Dec. 31, 1979, Ser. No. 108,354
Int. Cl.[3] G11B *17/04*
U.S. Cl. 369—262 4 Claims



1. In combination with a phonograph having a record centering spindle, said spindle being of a small diameter to accommodate a small diameter center opening within a first type of record, an adaptor to be located on said spindle, said adaptor to be located within the large diameter center opening of a second type of record, a stacked plurality of the second type of records to be located about said adaptor, said adaptor comprising:

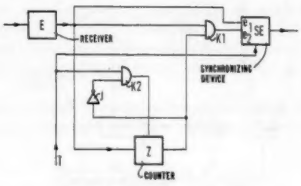
an elongated housing having an exterior cylindrical surface terminating in a lower end and an upper end, said lower end including a thin protruding flange which is adapted to be located against the phonograph record turntable and in continuous contact with a said second type of record, said upper end including guide means to guidingly locate said second type of record about said housing; and

a centrally located cylindrical opening formed within said housing, said opening being constant in diameter and extending from said upper end to said lower end, said opening to closely conform in size to said spindle, said opening having a side wall, said side wall being parallel to said cylindrical exterior surface of said housing, whereby a stack of records on said adaptor and located on said spindle may be physically removed in mass by physically grabbing said upper end and removing said adaptor and the stack of records from said spindle.

4,282,600
METHOD FOR SYNCHRONIZING SENDING AND RECEIVING DEVICES

Josef Zemanek, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 73,900
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842371
Int. Cl.[3] H04J *3/06*; H04L *7/00*
U.S. Cl. 370—100 3 Claims



1. A method for synchronizing sending and receiving devices of a PCM telecommunication network, employing synchronizing words contained within spaced message signal blocks, comprising the steps of;

counting a plurality of clock pulses produced at the receiving unit with a counter,

resetting the counter to its initial position upon receipt of each bit corresponding to the first bit of a synchronizing word,

effecting a synchronization upon receipt of the first such bit following the counter reaching its end count, and

preventing further counting of the counter when it reaches its end count, until a bit is received corresponding to the first bit of a synchronizing word.

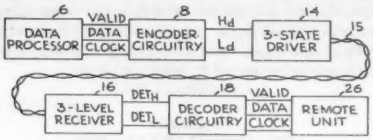
4,282,601
THREE LEVEL DATA TRANSMISSION SYSTEM HAVING MEANS FOR SEEKING A CONSTANT AVERAGE VALUE FOR THE TRANSMITTED SIGNALS

Laurence P. Flora, Covina, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 16,976, Mar. 2, 1979, abandoned. This application Jun. 5, 1979, Ser. No. 45,804
Int. Cl.[3] H04L *25/40*
U.S. Cl. 375—20 8 Claims

1. In a digital data transmission system, the improvement comprising:

encoding means for encoding an input digital signal having a predetermined number of possible values into a plural-level digital transmission signal, said encoding means being operable to encode said input digital signal in a manner so that at least one value of said input digital signal is selectively transmittable as either a first transmitted digital signal having an average level of one polarity relative to a predetermined intermediate average DC level



or as a second transmitted digital signal having an average level of an opposite polarity relative to said intermediate DC level;

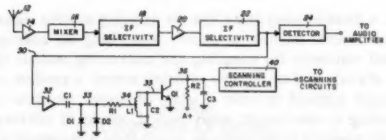
said encoding means including control means for controlling selection of said first and second transmitted digital signals in response to the average level of previously encoded signals so as to continually seek maintenance of said intermediate average level for the transmitted digital signal.

4,282,602

CHANNEL SIGNAL DETECTION CIRCUIT FOR SCANNING RECEIVERS

Daniel R. Schroeder, Glen Ellyn, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1979, Ser. No. 59,408
Int. Cl.³ H03J *7/18*
U.S. Cl. 455—169 **5 Claims**



1. An on channel signal detection system for use in scanning receivers for preventing a strong adjacent channel or station from causing a desired channel or station from being skipped during scanning comprising:

scanning control means for controlling scanning of the receiver over a selected frequency range including a plurality of channels or stations;

amplifying means for receiving IF signals of normally varying amplitude, said amplifying means providing amplification to said variable amplitude IF signals at an output of said amplifying means;

signal limiting means coupled to the output of said amplifying means to produce a constant voltage level output signal in response to said amplified and variable amplitude IF signals when said signals are above a predetermined magnitude;

impedance isolation means coupled to an output of said signal limiting means;

tank circuit means coupled to said impedance isolation means, said tank circuit means having sufficiently high Q to provide attenuation of any signals which vary from a predetermined frequency associated with said tank circuit means, and at which predetermined frequency scanning is to be stopped; and

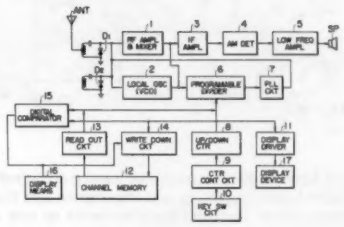
switching means coupled to the output of said tank circuit means and to said scanning control means, the switching means switching state in response to the presence of a voltage at the predetermined frequency from the output of said tank circuit means to deactivate said scanning control means only when the desired channel or station associated with the predetermined frequency is received.

4,282,603

SYNTHESIZER TUNER

Tetsuo Sato, Fussa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1979, Ser. No. 56,851
Claims priority, application Japan, Jul. 24, 1978, 53-89456
Int. Cl.³ H04B *1/26*; H03L *7/18*
U.S. Cl. 455—183 **2 Claims**



1. A synthesizer tuner, comprising:

a radio-frequency amplifier and mixer;

A PLL circuit consisting of a voltage controlled oscillator which works as a local oscillating circuit, a programmable divider the input of which is supplied with the oscillating output signal of said voltage controlled oscillator, a reference frequency oscillator, a phase detector a first and the second input of which are supplied with a output signal of said programmable divider and the output signal of said reference frequency oscillator and a low-pass filter connected between an output of said phase detector and said voltage controlled oscillator;

an intermediate-frequency amplifier the input of which is supplied with the output signal of said mixer;

a detector the input of which is supplied with the output signal of said intermediate-frequency amplifier;

a digital circuit for generating a binary information which controls the frequency-dividing ratio of said programmable divider;

a memory which stores a plurality of binary informations generated from said digital circuit;

a read-out circuit which sequentially reads out whole binary informations already stored in said memory in response to a write-down command signal;

a digital comparator circuit coupled to said readout circuit and said digital circuit for comparing the whole binary informations already stored in said memory with a binary information generated from said digital circuit; and

a write-down circuit which starts writing down said binary information from said digital circuit into said memory in response to an output signal of said digital comparator circuit when said whole binary informations already stored in said memory are not in agreement with said binary information generated from said digital circuit.

4,282,604

OPTICAL ISOLATION CIRCUIT FOR BIDIRECTIONAL COMMUNICATION LINES

William T. Jefferson, 113 Taylor St., Chapel Hill, N.C. 27514

Filed Apr. 4, 1979, Ser. No. 27,169
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—602 **10 Claims**

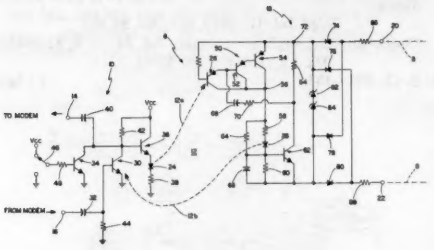
1. An isolation circuit for interfacing a data transceiver and a set of bidirectional communication lines, comprising:

a first light emitting device responsive to electrical signals generated by said transceiver;

a first light responsive transistor having a control terminal

electrically coupled to said communication lines, a first optical path being established between said first light emitting device and said first light responsive transistor;

a second light emitting device responsive to incoming signals on said communication lines and to said first light responsive transistor; and



a second light responsive transistor having a control terminal electrically coupled to said transceiver, said first light emitting device being further responsive to said second light responsive transistor;

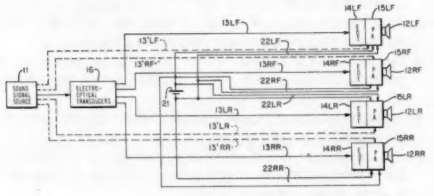
each one of said optical paths carrying negative feedback derived from data signals in the other one of said optical paths.

4,282,605

SOUND REPRODUCING WITH REMOTE AMPLIFYING TRANSDUCER

Amar G. Bose, Wayland, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Oct. 5, 1979, Ser. No. 82,300
Int. Cl.³ H04B *9/00*
U.S. Cl. 455—617 **7 Claims**



1. Vehicle sound reproducing apparatus comprising,

a sound signal source for providing a sound electrical signal representative of sound at a source location in a vehicle,

source electro-optical transducing means at said source location for transducing said sound electrical signal into a corresponding light signal,

receiving electro-optical transducing means at a receiving location in said vehicle remote from said source location for converting a received light signal into a corresponding received sound electrical signal,

power amplifying means for amplifying said received sound electrical signal to provide an amplified sound signal,

electro-acoustical transducing means for transducing said amplified sound signal into a corresponding sound signal,

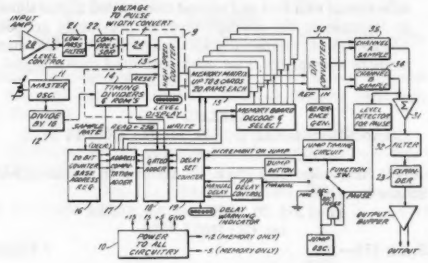
and light pipe means for intercoupling said source and receiving electro-optical transducing means.

4,282,606

BROADCAST DELAY LINE

Richard Factor, New York, N.Y., assignor to Eventide Clockworks, Inc., New York, N.Y.

Filed Apr. 12, 1979, Ser. No. 29,213
Int. Cl.³ H04H *7/04*
U.S. Cl. 455—620 **2 Claims**



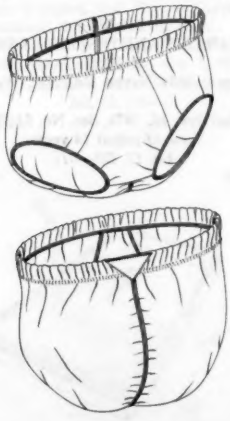
1. A broadcasting delay line for delaying audible signals for up to several seconds or more, comprising an analogue to digital converter for sampling and converting audible signals to a digital number capable of being stored, a random access memory adapted to store a series of digital numbers corresponding to the longest delay period, means to retrieve said digital numbers in the order in which they were stored after a delay of up to several seconds, a digital to analogue converter adapted to convert the numbers retrieved from the random access memory to provide the original analog value, amplifier means to amplify the received analog signals and provide the output, manually controlled means adapted to switch the retrieval of signals stored in said memory from the said delay time to real time and means to switch the retrieval of signals stored in said memory back again to the delay time in a series of jumps, each of said jumps being a fraction of the total delay time.

DESIGNS

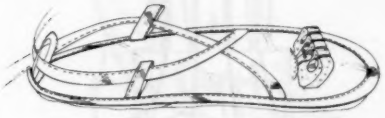
AUGUST 4, 1981

260,045
FROZEN CONFECTION OR SIMILAR ARTICLE
David Frankel, 19 Relmar Rd., Apt. 2B; Collin Craig, 4 Wilburton Rd., and Richard Green, 143 Everden Rd., all of Toronto, Ontario, Canada
Continuation-in-part of Ser. No. 768,734, Feb. 15, 1977, abandoned. This application May 14, 1979, Ser. No. 38,904
Claims priority, application Canada, Feb. 14, 1977, 140277
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—18

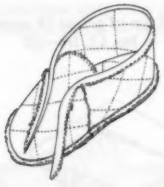
260,046
UNDERWEAR BRIEF
Eugene R. Burkard, 1115 Moana Dr., San Diego, Calif. 92107
Filed Jun. 29, 1979, Ser. No. 53,526
Term of patent 7 years
Int. Cl. D2—*01*
U.S. Cl. D2—10



260,047
PEDICURE SANDAL
Leonor W. Heinz, 1921 J. J. Pearce, Richardson, Tex. 75081
Filed Jun. 18, 1979, Ser. No. 49,100
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270

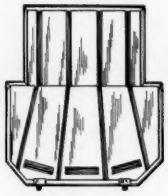


260,048
SLIPPER
Maria T. Bruno, 7243 S. Pebblecreek, West Bloomfield, Mich. 48033
Filed May 14, 1979, Ser. No. 38,491
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—278

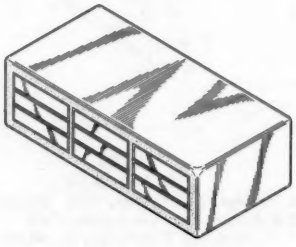


260,049
BELT BUCKLE
Ryk Van Brouwer, Los Angeles, Calif., assignor to Raintree Buckle & Jewelry, Inc., Los Angeles, Calif.
Filed Aug. 7, 1979, Ser. No. 64,417
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—440

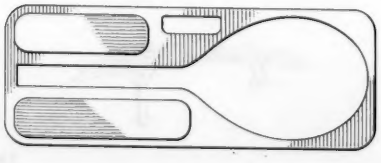
260,050
STORAGE CONTAINER FOR REMOVABLE AUTOMOBILE ROOFS
Richard S. Dunchock, Farmington Hills, Mich., assignor to Myco Industries, Inc., Davison, Mich.
Filed Sep. 5, 1978, Ser. No. 939,407
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30



260,051
CONTAINER FOR TAPE CASSETTES
Peter Ackeret, Küsnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Chur, Switzerland
Filed Apr. 26, 1979, Ser. No. 33,821
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 1156
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



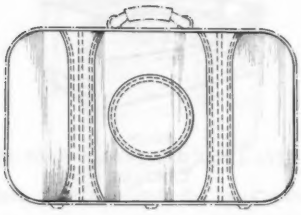
260,052
RACQUET DISPLAY CASE
Franklin S. Intengan, 666 W. 81 St., Apt. W-122, Hialeah, Fla. 33014
Filed May 7, 1979, Ser. No. 36,432
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36



260,053
HANDBAG
Milton I. Siegel, Martinsville, N.J., assignor to Amba Marketing Systems, Inc., Tempe, Ariz.
Filed May 29, 1979, Ser. No. 42,782
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—52

260,054
COMBINED CARRIER AND DISPENSER FOR BUSINESS CARDS
Robert L. Morgan, 2631 Naylor Rd., SE., Washington, D.C. 20020
Filed Jun. 26, 1979, Ser. No. 52,220
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—56

260,055
DESIGN FOR A SIGN PANEL FOR LUGGAGE
Sol Koffler, Providence, R.I., assignor to American Tourister, Inc., Warren, R.I.
Division of Ser. No. 709,888, Jul. 29, 1976, abandoned, which is a continuation of Ser. No. 552,373, Feb. 24, 1975, abandoned.
This application Oct. 28, 1977, Ser. No. 846,600
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—77



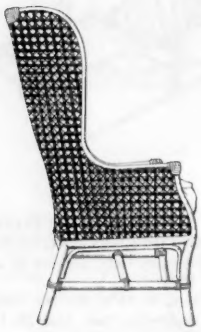
260,056
ARM-CHAIR
Richard Sapper, Stuttgart, Fed. Rep. of Germany, assignor to Knoll International, Inc., New York, N.Y.
Filed Mar. 1, 1978, Ser. No. 882,552
Claims priority, application Italy, Sep. 5, 1977, 22105 A/77
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31

260,057
CHAISE
Donald B. Colby, Los Angeles, Calif., assignor to Brown Jordan Company, Philadelphia, Pa.
Filed Oct. 2, 1978, Ser. No. 947,937
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38

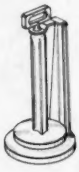
260,058
COMBINED TABLE, STORAGE CONSOLE AND MULTIPLE SEATING UNIT
Giulio Ponzellini, Bologna, Italy, assignor to Anonima Castelli, S.p.A., Bologna, Italy
Filed Nov. 30, 1976, Ser. No. 746,079
Claims priority, application Italy, May 31, 1976, 35821-B/76
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—41

260,059
COMBINED GLIDER AND COVER THEREFOR
Thomas R. Vorwerck, 3521 Valencia St., Dayton, Ohio 45404
Filed Oct. 13, 1978, Ser. No. 951,356
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—54

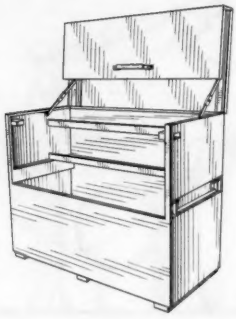
260,060
CHAIR
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Nov. 9, 1978, Ser. No. 959,436
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—57



260,061
VERTICAL TOWEL RACK
Woody Smith, 17020 Apt. No. 1 Sunset Blvd., Pacific Palisades, Calif. 90272
Filed Apr. 25, 1980, Ser. No. 143,720
Term of patent 14 years
Int. Cl. D23—*02;* D7—*99*
U.S. Cl. D6—96

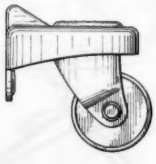


260,062
STORAGE CABINET OR SIMILAR ARTICLE
Howard L. Knaack, and Kenneth F. Weger, Jr., both of Cary, Ill., assignors to Knaack Manufacturing Company, Crystal Lake, Ill.
Filed Aug. 8, 1980, Ser. No. 176,341
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—167

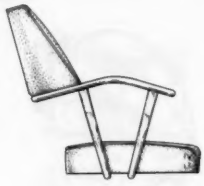


260,063
RECORD ALBUM HOLDER
Eugene W. Aylor, Brightwood, Va. 22715
Filed Feb. 9, 1979, Ser. No. 12,219
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—185

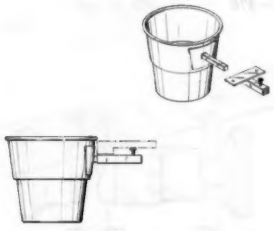
260,064
CASTER
Kiyoaki Kameda, 2635 Omiya, Fujinomiya-shi, Japan
Filed Oct. 12, 1978, Ser. No. 950,668
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



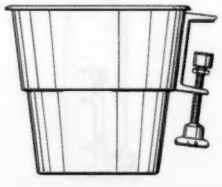
260,065
COMBINED SEAT AND BACKREST UNIT
Warren D. Petersen, St. Charles, Ill., assignor to Burd, Inc., Bannockburn, Ill.
Filed May 11, 1979, Ser. No. 38,074
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197



260,066
COMBINED WINE BUCKET AND TABLE ATTACHMENT BRACKET
Ralph A. Dark, 27619 Summerfield, San Juan Capistrano, Calif. 92675
Filed Aug. 10, 1978, Ser. No. 932,753
Term of patent 14 years
Int. Cl. D07—*06, 07*
U.S. Cl. D7—70

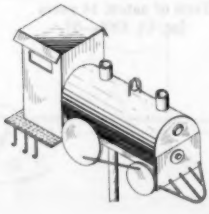


260,067
COMBINED WINE BUCKET AND TABLE ATTACHMENT BRACKET
Ralph A. Dark, 27619 Summerfield, San Juan Capistrano, Calif. 92675
Continuation-in-part of Ser. No. 932,573, Aug. 10, 1978. This application Aug. 17, 1979, Ser. No. 67,373
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—70

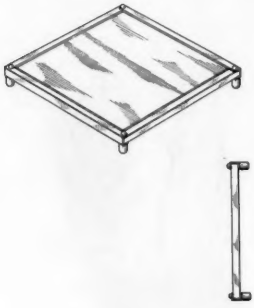


260,068
KITCHEN UTENSIL HOLDER
Walter Mandel, Forest Hills, N.Y., assignor to Manral Imports, Inc., Fairfield, N.J.
Filed Jun. 11, 1980, Ser. No. 158,477
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—74

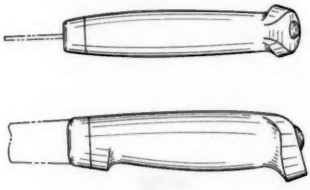
260,069
BARBEQUE
Thomas A. Birmingham, 6497 W. 3860 South, Hunter, Utah 84120
Filed Jun. 25, 1979, Ser. No. 51,381
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—109



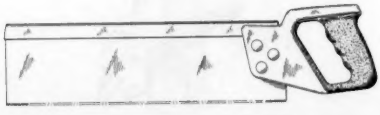
260,070
SURFACE PROTECTOR STAND
Harold F. Haverland, and Florence M. Haverland, both of 9414 Aldea Ave., Northridge, Calif. 91325
Filed Nov. 13, 1978, Ser. No. 959,660
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—130



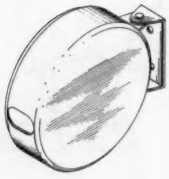
260,071
KNIFE HANDLE
Ronald W. Weber, Edina, Minn., assignor to Normark Corporation, Minneapolis, Minn.
Filed Jan. 12, 1979, Ser. No. 3,015
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—151



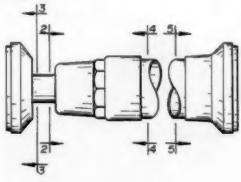
260,072
BACK SAW
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Sep. 25, 1978, Ser. No. 945,534
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—97



260,073
CORD WINDER
Sid Wells, P.O. Box 4575, Scottsdale, Ariz. 85258
Filed Nov. 27, 1979, Ser. No. 97,824
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—358

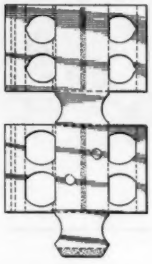


260,074
COMBINED ADJUSTABLE CURTAIN ROD HOLDER AND ROD
Robert H. Lewis, Marysville, Ohio, assignor to Ray Lewis & Son, Inc., Marysville, Ohio
Filed Sep. 26, 1979, Ser. No. 79,023
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—376



260,075
DRAPERY CHANNEL
George H. Baker, Sr., 4211 W. Simpson Dr., Meadowood, Dunlap, Ill. 61525
Filed Feb. 28, 1979, Ser. No. 16,283
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—377

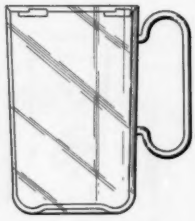
260,076
GLASSWARE CARRIER CARTON BLANK
Joseph F. Schillinger, Palo Hills, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed May 24, 1978, Ser. No. 908,997
The portion of the term of this patent subsequent to Jul. 26, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—346



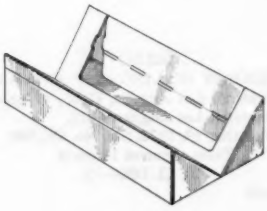
260,077
RESTRAINT PACKAGE
John E. Burns, Seaford, and Martin J. Van Lith, Kew, both of Australia, assignors to Alfred Hospital, Prahran, Australia
Filed Nov. 29, 1977, Ser. No. 855,914
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—416

260,078
COMBINED BOTTLE AND CUP
Mario Casoni, Finale Emilia, Italy, assignor to Compagnia Fabbricazione Liwuori s.a.s. di Mario Casoni & C., Modena, Italy
Filed Nov. 13, 1978, Ser. No. 959,472
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—337

260,079
MIXING CAN
Arne P. Darnell, Karlshamn, Sweden, assignor to Perstorp AB, Perstorp, Sweden
Filed Dec. 5, 1977, Ser. No. 857,457
Claims priority, application Sweden, Jun. 22, 1977, 771369
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—383

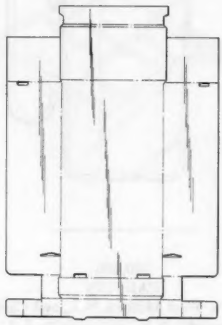


260,080
CARTON
Richard A. Ravotto, West Milford, N.J., and Charles W. Rosenburg, Jr., Tonawanda, N.Y., assignors to J. C. Penney Company, Inc., New York and F. N. Burt Co., Inc., Buffalo, both of, N.Y., a part interest to each
Filed Sep. 23, 1977, Ser. No. 835,975
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418



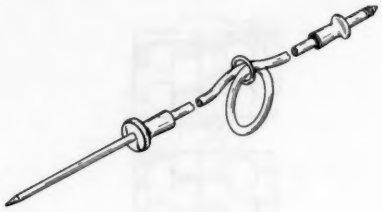
260,081
PACKAGING CONTAINER FOR A PAINT BRUSH
Jerome Kronfeld, Washington Crossing, Pa., and Garry Furst, West Newton, Mass., assignors to American Brush Company, Inc., Stoughton, Mass.
Filed Dec. 8, 1978, Ser. No. 967,707
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418

260,082
BLANK FOR FORMING A BOX WITH REINFORCED CORNERS
Ronald V. Johnson, Port Washington, Wis., assignor to Champion International Corporation, Stamford, Conn.
Filed Dec. 21, 1978, Ser. No. 971,954
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433

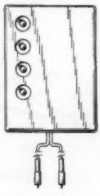


260,083
COMBINED BOX SEALING CLIP AND HANDLE
Robert E. Strickland, Los Angeles, Calif., assignor to David Hersh & Associates, Los Angeles, Calif.
Filed Oct. 19, 1978, Ser. No. 952,940
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—443

260,084
FOOD TEMPERATURE SENSING PROBE ASSEMBLY
Yoshiro Asano, Saitama, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Oct. 13, 1978, Ser. No. 951,089
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—60

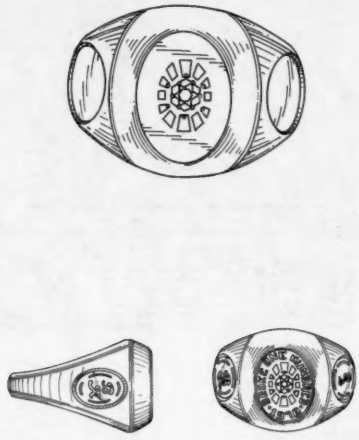


260,085
AUTOMOTIVE PORTABLE ELECTRICAL TEST SET
Philip H. Mitchell, Yukon, Okla., assignor to JMJ Electronics Corp., Oklahoma City, Okla.
Filed Dec. 5, 1978, Ser. No. 966,762
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



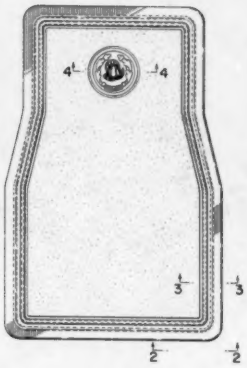
260,086
NECKLACE
Richard R. Lambert, 2503 Diamond Hill Rd., Apt. #16, Woonsocket, R.I. 02895
Filed Jun. 8, 1979, Ser. No. 46,857
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—8

260,087
RING
Patrick S. Solon, 2525 Thorn, Fullerton, Calif. 92635
Filed Oct. 18, 1978, Ser. No. 952,237
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—35

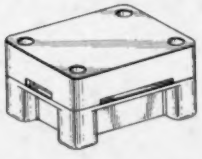


260,088
BUD VASE
Richard W. Murphy, 17846 San Clemente St., Fountain Valley, Calif. 92708
Filed Apr. 6, 1979, Ser. No. 27,747
Term of patent 14 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—146

260,089
FRONT AUTO MAT
Dwight N. Wooters, LaGrange, Ga., assignor to Rubbermaid Specialty Products Inc., LaGrange, Ga.
Filed Mar. 7, 1979, Ser. No. 18,347
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—203



260,090
ELECTRICAL JUNCTION BOX
Robert T. Hughes, Thomasville; Gordon S. Servert, Kernersville, and Thomas R. Marsh, High Point, all of N.C., assignors to The Hughes Supply Company of Thomasville, Incorporated, Thomasville, N.C.
Filed May 7, 1979, Ser. No. 36,433
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—40



260,091

SEMICONDUCTOR

Hidetoshi Mochizuki, Fuchu; Keizo Otsuki, Higashiyamayo; Hideki Kosaka, Kodaira, and Gen Murakami, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

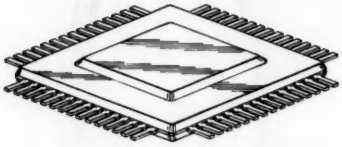
Filed Feb. 26, 1979, Ser. No. 15,216

Claims priority, application Japan, Aug. 25, 1978, 53-35723; Aug. 25, 1978, 53-35730; Aug. 25, 1978, 53-35734; Aug. 25, 1978, 53-35738

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—99



260,092

TIME LAPSE VIDEO CASSETTE RECORDER

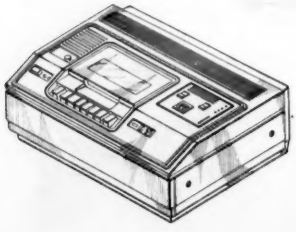
W. Craig Bullock; Francis J. Reid, both of San Dimas; Oliver T. Tetirick, and Robert R. Tripp, both of Orange, all of Calif., assignors to Odetics, Inc., Anaheim, Calif.

Filed Mar. 5, 1979, Ser. No. 17,128

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—2



260,093

COMBINED AUTOMOBILE CARTRIDGE PLAYER AND RADIO

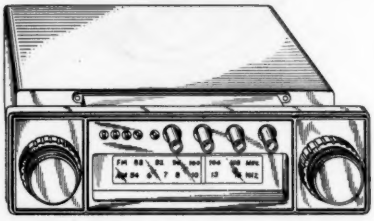
Jack Katz, Far Rockaway, N.Y., assignor to Mark Tatsuta, Dobbs Ferry, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,761

Term of patent 14 years

Int. Cl. D14—*01, 03*

U.S. Cl. D14—5



260,094

VACUUM CLEANER FOR SPAS OR THE LIKE

Jonathan Watkins, San Marcos, Calif., assignor to Watkins Manufacturing Company, Calif.

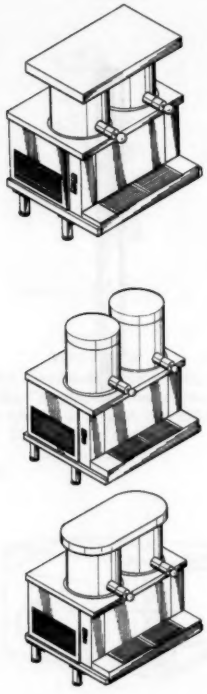
Filed Jan. 8, 1979, Ser. No. 2,011

Term of patent 14 years

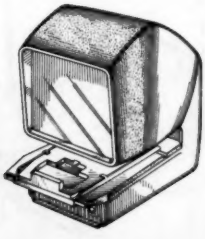
Int. Cl. D15—*05*

U.S. Cl. D15—52

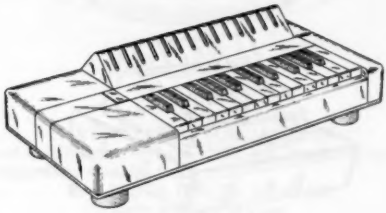
260,095
SLUSH DISPENSER
Henry C. Bischoff, Lahaska, and David C. Johnson, Ambler, both of Pa., assignors to Refreshment Machinery Incorporated, Warminster, Pa.
Filed Jul. 18, 1979, Ser. No. 58,575
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—115



260,096
MICROFILM READER
John W. Overman, Phoenix, Ariz.; Michael V. Polinsky, Iron Ridge, and John R. Zellner, Hartford, both of Wis., assignors to Bell & Howell Company, Chicago, Ill.
Filed Aug. 21, 1978, Ser. No. 935,283
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—14

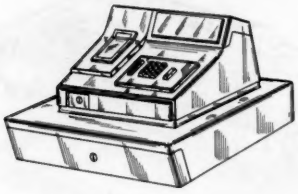


260,097
ELECTRIC PIANO OR SIMILAR ARTICLE
Luciano Antonelli, Osimo, Italy, assignor to F.lli Antonelli s.n.c. del Cav. Luigi Antonelli & C., Osimo, Italy
Filed May 15, 1978, Ser. No. 906,130
Claims priority, application Italy, Nov. 15, 1977, 22725/77[U]
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—7



260,098
ELECTRIC PIANO OR SIMILAR ARTICLE
Luciano Antonelli, Osimo, Italy, assignor to F.lli Antonelli s.n.c. del Cav. Luigi Antonelli & C., Osimo, Italy
Filed May 15, 1978, Ser. No. 907,250
Claims priority, application Italy, Nov. 15, 1977, 22724/77[U]
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—7

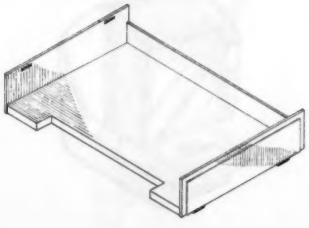
260,099
CASH REGISTER
Junichi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Dec. 4, 1978, Ser. No. 965,730
Claims priority, application Japan, Jun. 8, 1978, 53-23930
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4



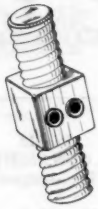
260,100
CASH REGISTER
Junichi Sakamoto, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed May 25, 1979, Ser. No. 42,284
Claims priority, application Japan, Dec. 4, 1978, 53-51513
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4

260,101
PEN
Francine Gomez, Paris, France, assignor to Waterman S.A., Paris, France
Filed Jun. 5, 1979, Ser. No. 45,741
Claims priority, application France, Dec. 6, 1978, 78 77096
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51

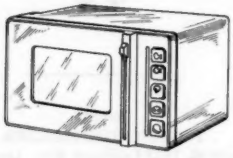
260,102
STACKING TRAY
Donald L. Evans, DeForest, Wis., assignor to Don Evans, Inc., DeForest, Wis.
Filed Dec. 11, 1978, Ser. No. 968,394
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92



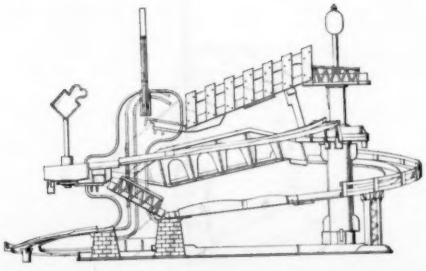
260,103
TOY FASTENER
Mel Appel, 9 Nottingham Rd., Livingston, N.J. 07039, and Paul B. Means, Basking Ridge, N.J., assignors to Mel Appel, Livingston, N.J.
Filed Feb. 23, 1979, Ser. No. 14,600
Term of patent 14 years
Int. Cl. D21—*01;* D8—*08*
U.S. Cl. D21—109



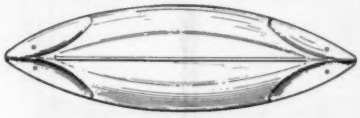
260,104
TOY OVEN
Ronald R. Klawitter, Gasconade County, Mo., assignor to Steven Manufacturing Company, Hermann, Mo.
Filed Apr. 17, 1978, Ser. No. 896,818
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



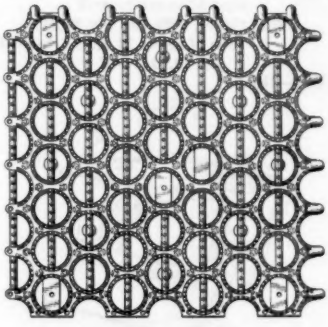
260,105
TOY TRACKWAY
Hajime Matsumoto, Chiba, Japan, assignor to Toybox Corporation, Japan
Filed Jan. 26, 1979, Ser. No. 7,015
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



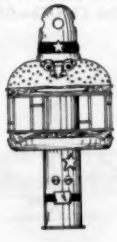
260,106
PLURAL MAN SURFBOAT
Richard C. Peritz, 2501 NE. 19th Ave., Wilton Manors, Fla. 33305
Filed Jul. 9, 1979, Ser. No. 55,979
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228



260,107
ARTIFICIAL SKI SURFACE UNIT
Gerald E. Mittmann, Anaheim, Calif., assignor to Port-a-Slope Corporation, Anaheim, Calif.
Filed May 24, 1979, Ser. No. 42,095
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244

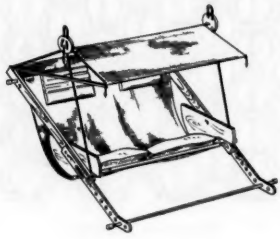


260,108
PLAYGROUND CLIMBER
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,355
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—245



260,109
SWING
Paul W. Ahrens, Grinnell, Iowa, assignor to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 24, 1979, Ser. No. 78,823
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246

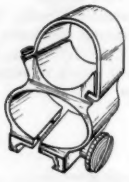
260,110
SWING
Daniel Gomes, 104½ E. Kirkwood, No. 8, Bloomington, Ind. 47401
Filed Oct. 9, 1979, Ser. No. 82,817
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246



260,111
PLAYGROUND MERRY-GO-ROUND
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,354
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—249

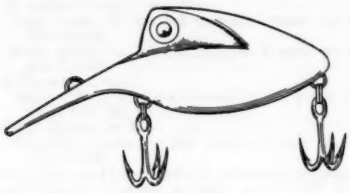
260,112
PLAYGROUND SEATING TRAIN
Donald S. Ament, Encino, and Duane S. Ament, Hollywood, both of Calif., assignors to Miracle Recreation Equipment Company, Grinnell, Iowa
Filed Sep. 20, 1979, Ser. No. 77,364
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—250

260,113
OPTICAL GUN SIGHT MOUNT
Cecil J. Ross, El Paso, Tex., assignor to W. R. Weaver Company, El Paso, Tex.
Filed Oct. 22, 1979, Ser. No. 86,882
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

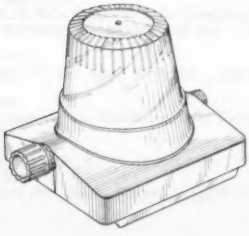


260,114
FISHING ROD HOLDER
Alfred E. Cecchetti, 1623 Leishman Ave., Arnold, Pa. 15068
Filed Aug. 2, 1979, Ser. No. 63,067
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13

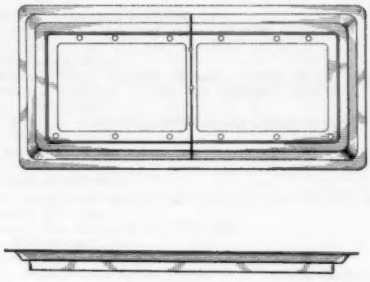
260,115
FISHING LURE
William T. Neavin, 3736 Berry Dr., Studio City, Calif. 91604
Filed Sep. 20, 1979, Ser. No. 77,167
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



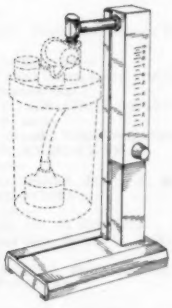
260,116
LAWN FERTILIZER FEEDER
Kenneth M. Hattori, Bensenville, and Sigmar E. Sobczak, Waukegan, both of Ill., assignors to Acme Burgess, Inc., Grayslake, Ill.
Filed Dec. 7, 1979, Ser. No. 100,968
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



260,117
VENTILATOR SECTION
Elwin E. Peirce, 3890 Monroe Ave. Northeast, and Arthur L. Waltz, 4415 - 75th Ave. Southeast, both of Salem, Oreg. 97301
Filed Dec. 4, 1978, Ser. No. 966,150
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



260,118
PORTABLE OXYGEN EXTENDER STATION
Charles C. Hill, La Jolla, Calif., assignor to Marx Medical, Inc., La Jolla, Calif.
Filed Feb. 9, 1979, Ser. No. 10,896
Term of patent 14 years
Int. Cl. D24—*01, 02*
U.S. Cl. D24—8



260,119
ULTRASONIC NEBULIZER
Ernst Reichl, Munich, Fed. Rep. of Germany, assignor to Bosch Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
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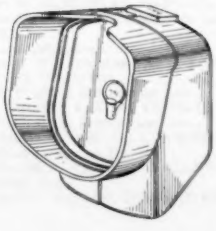

LIST OF PATENTEES

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BBC Brown Boveri & Company Limited: *See*—
Bratoljic, Tihomir, 4,282,451, Cl. 310-262.000.
Kmetz, Allan R.; and Muller, Klaus, 4,281,902, Cl. 350-336.000.

Beales, John H., to Beales Steel Products Ltd. Bulldozer blade. 4,281,721, Cl. 172-821.000.

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Becker, Carl; Mahler, Georges; and Erzinger, Paul, to Ciba-Geigy Corporation. Aqueous dye preparations of dyes difficultly soluble in water. 4,281,999, Cl. 8-527.000.

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Broom, Nigel J. P., 4,282,236, Cl. 424-270.000.
Cantello, Barrie C. C., 4,282,356, Cl. 544-53.000.
Dowrick, John S., 4,282,202, Cl. 424-23.000.
Guest, Angela W.; Taylor, Andrew W.; and Ramage, Robert, 4,282,373, Cl. 560-181.000.

Beelitz, Howard R.; and Preslar, Donald R., to RCA Corporation. Method of integrating semiconductor components. 4,282,538, Cl. 357-15.000.

Behrens, Hermann W.: *See*—
Lee, Roland E.; Berger, Alfred G.; Sowers, Dennis A.; Sergeant, Richard J.; and Behrens, Hermann W., 4,281,540, Cl. 73-147.000.

Beisler, Alfons, to Beisler GmbH. Sewing machine. 4,281,606, Cl. 112-121.150.

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Belden Corporation: *See*—
Smith, William G., 4,281,444, Cl. 29-426.500.

Belke, William H.; Goloff, Alexander; and Grim, George B., to Caterpillar Tractor Co. Rotating fluidized bed gasifier system. 4,282,009, Cl. 48-61.000.

Bell Telephone Laboratories, Incorporated: *See*—
Boie, Robert A., 4,282,437, Cl. 250-492.00A.
Kometani, Thomas Y.; and Wood, Darwin L., 4,282,196, Cl. 423-337.000.
Ribera, John F.; Schaefer, Walter R.; and Seibel, Robert R., 4,282,400, Cl. 178-73.000.
Semplak, Ralph A., 4,282,530, Cl. 343-784.000.
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Tsang, Won-Tien, 4,282,541, Cl. 357-30.000.

Belrecolt S.A.: *See*—
Wattron, Albert, 4,281,506, Cl. 56-370.000.

Benda, Rainer; Knoell, Helmuth; Neudoerfl, Peter; and Pennewiss, Horst, to Rohm GmbH. Lubricating oil additives. 4,282,132, Cl. 260-30.200.

Bendix Corporation, The: *See*—
Gaiser, Robert F.; and Stone, Samuel E., 4,281,880, Cl. 303-6.00C.
Hoffman, David A., 4,281,677, Cl. 137-113.000.
Luca, Vincent A., Jr., 4,281,887, Cl. 339-103.00M.
Runkle, Dean E.; Tang, Louis S.; and Harrison, Gregory K., 4,281,585, Cl. 91-5.000.
Sisson, Albert E.; and Lewis, Donald J., 4,281,792, Cl. 239-5.000.

Benedict, Charles E.: *See*—
Pollock, Stephen F.; and Benedict, Charles E., 4,281,583, Cl. 89-33.0BB.

Benedyk, Joseph C., to Brunswick Corporation. Woven fabric made of low modulus, large diameter fibers. 4,281,689, Cl. 139-420.00A.

Bennett, Timothy J., Sr. Teaching aid for keyed musical instruments. 4,281,579, Cl. 84-478.000.

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Raible, Donald A., 4,282,180, Cl. 422-46.000.

Beres, Ernest A.: *See*—
Carroll, Charles B.; Schaller, Frederick C.; and Beres, Ernest A., 4,281,816, Cl. 249-82.000.

Bergen, Richard F., to Xerox Corporation. Development method and apparatus. 4,282,303, Cl. 430-120.000.

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Lee, Roland E.; Berger, Alfred G.; Sowers, Dennis A.; Sergeant, Richard J.; and Behrens, Hermann W., 4,281,540, Cl. 73-147.000.

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Berger, Rupert: *See*—
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,281,823, Cl. 266-246.000.

Berkshire Furniture Co., Inc.: *See*—
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Berney, Daniel, to Sandoz Ltd. Trans-n-cinnamyl-n-methyl-(1-naphthylmethyl)amine. 4,282,251, Cl. 424-316.000.

Bernstein, Seymour; and Poletto, John F., to American Cyanamid Company. Halogenated-naphthalenetriyltris(sulfonylimino)-aryl multicarboxylic acids and salts thereof. 4,282,375, Cl. 562-427.000.

Berthet, Michel; Kermarrec, Jean-Claude; and Ravelet, Robert, to Compagnie Europeenne pour l'Equipement Menager "CEPEM". Thermoelectric heat exchanger including a liquid flow circuit. 4,281,516, Cl. 62-3.000.

Bethlehem Steel Corporation: *See*—
Austen, Alfred R.; and Humphries, Darral V., 4,282,277, Cl. 428-36.000.

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Ciuba, Stanley J., 4,282,111, Cl. 252-178.000.

Bevers, Robert C.; Durr, Helmut E.; and Mock, George E., to Western Electric Company, Inc. Apparatus for coating conductors. 4,281,617, Cl. 118-68.000.

Bevert, Amedee P.: *See*—
Poisson-Quinton, Philippe; Bevert, Amedee P.; and Le Thuy, Hung, 4,281,810, Cl. 244-75.00R.

Biancale, Vito. Tarpaulin cover system for use with a truck box. 4,281,872, Cl. 296-100.000.

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Bigg, Dennis C. H., to Synthelabo. Thiazole derivatives useful in therapy as anti-depressant agents. 4,282,225, Cl. 424-251.000.

Bird, James W. Portable sections for dog race track. 4,281,831, Cl. 272-5.000.

Bird, Robert D.; and Vance, Harry R., to Reynolds Metals Company. Zinc removal from aluminate solutions. 4,282,191, Cl. 423-119.000.

Black & Decker Inc.: *See—*
Jinkins, Danny R., 4,281,964, Cl. 415-203.000.
Walton, Richard E., II, 4,281,457, Cl. 30-124.000.

Black, Ronald M. F. Dartboard safety surround. 4,281,836, Cl. 273-408.000.

Blackwell, Thomas D. Anti-friction slide valve support for screw compressor. 4,281,975, Cl. 418-201.000.

Blaese, Herbert R., to Avanti Research & Development, Inc. Vertical antenna with upwardly flaring base mounted conductors. 4,282,531, Cl. 343-791.000.

Blake, Jon R., to General Mills, Inc. Dairy based mixes for frozen desserts and method of preparation. 4,282,262, Cl. 426-565.000.

Blakeslee, Theodore R., III: *See—*
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Blaser, Dwight A.; and Goding, David J., to General Motors Corporation. Compact exhaust silencer for diesel locomotives. 4,281,741, Cl. 181-250.000.

Blaupunkt-Werke GmbH: *See—*
Bragas, Peter, 4,282,545, Cl. 358-4.000.

Blawert, Dieter: *See—*
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Blechschmitt, Kurt: *See—*
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Bloom, Melvin S.: *See—*
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukeinen, Joseph Y., 4,282,354, Cl. 542-441.000.

Blount, David H. Process for the production of polyol-alkali metal silicate emulsion. 4,282,129, Cl. 260-29.20E.

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Boberg, Tore: *See—*
Claussen, Lennart; and Boberg, Tore, 4,281,718, Cl. 169-41.000.

Boegli, Serge; and Lebet, Jean-Pierre, to F. J. Burrus & Cie.; and Baumgartner Papier SA. Production of cigarette filter units. 4,281,591, Cl. 493-45.000.

Boehringer Mannheim GmbH: *See—*
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Wiemann, Gunter, 4,282,151, Cl. 260-326.00A.
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Hebold, Gottfried, 4,282,212, Cl. 424-200.000.
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Boeing Company, The: *See—*
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Boggs, David R.; and Metcalfe, Robert M., to Xerox Corporation. Data communication system. 4,282,512, Cl. 340-147.0LP.

Boie, Robert A., to Bell Telephone Laboratories, Incorporated. Charged particle beam lithography. 4,282,437, Cl. 250-492.00A.

Boily, Robert L.: *See—*
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Boiten, Ebbe: *See—*
Bakker, Eppe; Boiten, Ebbe; Kingma, Eildert; Lenting, Gerard J.; and Wijma, Willem S., 4,281,453, Cl. 30-43.600.

Bondurant, David W.; and Martin, Richard J., to Sperry Corporation. Automatic overflow/imminent overflow detector. 4,282,581, Cl. 364-737.000.

Bonkowski, Lorne. Clean pack carrier. 4,281,502, Cl. 53-398.000.

Bonner, Edgar L. Vibration responsive door alarm. 4,282,518, Cl. 340-566.000.

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Borg-Warner Corporation: *See—*
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Borger, Robert M.: *See—*
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Borjesgard, Pehr; Cetrelli, Renzo; Kullendorff, Anders; Schon, Stur; and Wikner, Jan, to Stal-Laval Turbin AB. Gas turbine plant. 4,281,510, Cl. 60-39.320.

Bormann, Dieter; Durckheimer, Walter; and Schrinner, Elmar, to Hoechst Aktiengesellschaft. Cephem derivatives. 4,282,220, Cl. 424-246.000.

Bose, Amar G., to Bose Corporation. Sound reproducing with remote amplifying transducer. 4,282,605, Cl. 455-617.000.

Bose Corporation: *See—*
Bose, Amar G., 4,282,605, Cl. 455-617.000.

Bosits, Gyula: *See—*
Takacs, Istvan; Bosits, Gyula; Vereczkey, Endre; and Kerey, Gyorgy, 4,282,101, Cl. 210-403.000.

Bosse, Frank; and Zemella, Horst, to Windmoller & Holscher. Apparatus for applying adhesive rider strips to the flattened end edges of tube sections or sacks. 4,282,055, Cl. 156-464.000.

Bosshard, Ernst, to Sulzer Brothers Limited. Apparatus for irradiation of piece goods. 4,281,954, Cl. 414-287.000.

Bostick, Francis X.: *See—*
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Bourne, Henry A., Jr.: *See—*
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Bousquet, Gilles; Egraz, Jean-Bernard; Rambert, Andre; and Ravet, Georges, to Societe d'Exploitation des Procedes Coatex. Acrylic cement applicable in bone surgery and in stomatology. 4,282,140, Cl. 260-42.520.

Boveri, Sergio: *See—*
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Bowe Maschinenfabrik GmbH: *See—*
Bartoschek, Ernst; and Christof, Emil, 4,282,015, Cl. 55-179.000.

Bowen, James H., to DBS, Inc. Imprinter and method of making same. 4,281,596, Cl. 101-269.000.

Bowman, Harold M. Manhole cover support. 4,281,944, Cl. 404-26.000.

Bowmar/Ali, Inc.: *See—*
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Bowyer, John M.: *See—*
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Bowyer, Michael L., to Baker International Corporation. Selectively bridged expansion joint. 4,281,858, Cl. 285-39.000.

Bowyer, William H.: *See—*
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Boynton, Donald E., to Hercules Incorporated. Method of visbreaking polypropylene. 4,282,076, Cl. 204-159.200.

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Bozzuto, Carl R., to Combustion Engineering, Inc. Coal gasifier supplying MHD-steam power plant. 4,282,449, Cl. 310-11.000.

Braddick, Britt O.; and Lindsey, Hiram E., to Texas Iron Works, Inc. Apparatus for positioning a liner on a tubular member in a well bore with a retrievable pack off bushing therebetween. 4,281,711, Cl. 166-118.000.

Bradley, Irving: *See—*
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Brand, Rolf A.: *See—*
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Brandt Manufacturing, Inc.: *See—*
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Brandt, Vernon, to Brandt Manufacturing, Inc. Spring suspension. 4,281,851, Cl. 280-718.000.

Bratoljic, Tihomir, to BBC Brown Boveri & Company Limited. Solid rotor for asynchronous electrical machines. 4,282,451, Cl. 310-262.000.

Brazell, Charles R.; and Villanueva, Joseph A., to Geosource Inc. Article-detect signal separating network. 4,281,765, Cl. 209-576.000.

Bredeweg, Roger L.; O'Brien, Larry S.; and Vallance, Charles B., to Leco Corporation. Combustion system. 4,282,183, Cl. 422-78.000.

Brennan, Edward J.: *See—*
Iwans, Robert C.; Brennan, Edward J.; and Weik, Kirby B., 4,281,874, Cl. 297-163.000.

Brenner, L. Martin, to SmithKline Corporation. Renal vasodilating 3,4-dihydroxyphenyltetrahydrothienopyridines. 4,282,227, Cl. 424-256.000.

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Briley, George C.: *See—*
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Menard, Marcel; and Martel, Alain, 4,282,150, Cl. 260-245.20R.
Theuer, Richard C., 4,282,265, Cl. 426-607.000.

Britz, Jeffrey E. Belt buckle construction. 4,281,440, Cl. 24-191.000.

Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and

Schelev, Mikhail Y. Electrooptical camera for registering high-speed processes. 4,282,427, Cl. 250-213.0VT.
Broeg, Helmut, to Dubro, Inc. Balanced rotary-faced valve. 4,281,684, Cl. 137-625.210.
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Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., to Celanese Corporation. Precision orifice nozzle devices for ink jet printing apparati and the process for their manufacture. 4,282,533, Cl. 346-75.000.
Broom, Nigel J. P., to Beecham Group Limited. β-Lactam antibacterial agents, their use in pharmaceutical compositions, and intermediates. 4,282,236, Cl. 424-270.000.
Brower, Boyd G.: *See—*
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Brown, Lawrence G. Drive system for bicycles and other apparatus. 4,281,845, Cl. 280-236.000.
Brown, Ronald A.; Hu, Sung C.; and Struger, Odo J., to Allen-Bradley Company. Mini-programmable controller. 4,282,584, Cl. 364-900.000.
Bruder, Alan H., to Polaroid Corporation. Method for forming noble metal silver precipitating nuclei. 4,282,307, Cl. 430-232.000.
Bruhmann, Werner; Schwartz, Reinhard; and Hummel, Darsten, to Robert Bosch GmbH. Centrifugal rpm governor for internal combustion engines. 4,281,630, Cl. 123-373.000.
Bruno, Carlo L., to Alisyncro S.a.s. di Bruno & C. Distributing conveyor installation and control method therefor. 4,281,756, Cl. 198-356.000.
Brunson, Amber N., to Brunson Instrument Company. Optical transit square with focusable crossing telescopes. 4,281,928, Cl. 356-140.000.
Brunson Instrument Company: *See—*
Brunson, Amber N., 4,281,928, Cl. 356-140.000.
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Buchner, Heinrich; and Horn, Hannes S., to Klockner-Humboldt-Deutz AG. Apparatus for the conveyance and/or treatment of hot gases. 4,281,963, Cl. 415-178.000.
Bucker, Werner; and Rademacher, Christian, to Messer Griesheim GmbH. Process and apparatus for galvanizing a wire. 4,282,273, Cl. 427-398.300.
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Budniak, Mitchell S.; and Martin, Donald P., to Qwint Systems Inc. Control system for a multi-phase motor. 4,282,471, Cl. 318-685.000.
Buehler, Oscar R.; and Porter, Harold F., to Du Pont de Nemours, E. I., and Company. Process for purifying hexamethylenediamine. 4,282,381, Cl. 564-498.000.
Bugarin, Tony L. Combination depth gauge and level for a drill. 4,281,949, Cl. 408-241.00R.
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Burbank, John E., III, to McNab, Incorporated. Strain meter. 4,281,537, Cl. 73-862.330.
Burkert, Rudolf, to Didier Engineering GmbH. Tar separating device. 4,282,096, Cl. 210-182.000.
Burley, William G., to T.I.C. Enterprises, Limited. Thermal ice cap. 4,281,802, Cl. 242-55.000.
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Burris, Michael V. Gilsonite emulsion compositions. 4,282,037, Cl. 106-202.000.
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Busse, Claus A. O., to European Atomic Energy Community-EURATOM. Thermal heat pump. 4,281,709, Cl. 165-104.220.
Bussjager, Rudy C., to Carrier Corporation. Makeup air preconditioner for use with an air conditioning unit. 4,281,522, Cl. 62-409.000.
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Bynre, Stanley W.; Tompkins, Barry J.; and Hayes, Ernest B., to American Filtrona Corporation. Production of tobacco smoke filters. 4,281,671, Cl. 131-335.000.
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Caccamisi, Michael V. Apparatus for filling lamps. 4,281,692, Cl. 141-370.000.
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Cale, Albert D., Jr.; and Leonard, Charles A., to A. H. Robins Company, Inc. Optical isomers of 4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide. 4,282,243, Cl. 424-274.000.
Cale, Albert D., Jr.; and Leonard, Charles A., to A. H. Robins Company, Inc. Optical isomers of 4-amino-N-(1-cyclohexyl-3-pyrrolidinyl)-N-methylbenzamide. 4,282,244, Cl. 424-274.000.
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Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuichi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.
Shimizu, Masami; and Aizawa, Hiroshi, 4,282,503, Cl. 335-276.000.
Tanaka, Kazuo, 4,281,906, Cl. 350-427.000.
Tezuka, Nobuo; Hashimoto, Teiji; Senuma, Mitio; and Iwata, Yutaka, 4,281,914, Cl. 354-244.000.
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Caraway, Ricky E. Smoking device. 4,281,672, Cl. 131-174.000.
Carney, Ronald E.: *See—*
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Dixon, Richard B.; and Carr, Peter, 4,281,455, Cl. 30-47.000.
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Bussjager, Rudy C., 4,281,522, Cl. 62-409.000.
Jacobs, John J., 4,281,972, Cl. 417-415.000.
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Carter, Gary W.: *See—*
Lord, David E.; Petrini, Richard R.; and Carter, Gary W., 4,281,929, Cl. 356-241.000.
Carter, Lewis M., Sr., to Lewis M. Carter Mfg. Co., Inc. Peanut separator. 4,282,091, Cl. 209-467.000.
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Vegh, Elmer S.; Klier, Donald F.; Schwerzler, Davis S.; and Castle, William F., 4,281,636, Cl. 126-369.000.
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Watine, Didier J. M. M.; Hine, Jean P. M.; Catabelle, Jean M. H.; and Delamotte, Jean C. C., 4,282,396, Cl. 174-84.00R.
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Morrow, Robert D., 4,282,484, Cl. 324-207.000.
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Belke, William H.; Goloff, Alexander; and Grim, George B., 4,282,009, Cl. 48-61.000.
Morris, Hugh C., 4,281,676, Cl. 137-102.000.

Caujolle, Jean-Pierre: *See—*
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Borjesgard, Pehr; Cetrelli, Renzo; Kullendorff, Anders; Schon, Stur; and Wikner, Jan, 4,281,510, Cl. 60-39.320.
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Neidleman, Saul L.; and Geigert, John, 4,282,324, Cl. 435-168.000.
Chadima, George E., Jr.; and Laser, Vadim, to Norand Corporation. Instant portable bar code reader. 4,282,425, Cl. 235-462.000.
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Chandick, Michael D.; Chandick, Robert M.; and Ricchio, Pasquale, to Miro Manufacturing Company. Portable luggage carrier and method of collapsing same. 4,281,849, Cl. 280-655.000.
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Chang, Chin-An, to International Business Machines Corporation. Process for reducing the interdiffusion of conductors and/or semiconductors in contact with each other. 4,282,043, Cl. 148-1.500.
Chang, Jack C.; and Sandifer, James R., to Eastman Kodak Company. Planar glass ion-selective electrode. 4,282,079, Cl. 204-195.00G.
Chanson, Gary J.; and Nicolson, Alexander M., to Sperry Corporation. Resonant acoustic transducer and driver system for a well drilling string communication system. 4,282,588, Cl. 367-82.000.
Chapler, Robert S.: *See—*
Kuepper, Theodore A.; and Chapler, Robert S., 4,282,097, Cl. 210-200.000.
Chapman Enterprises Corp.: *See—*
Trousil, Edward G., 4,282,131, Cl. 260-29.70R.
Chapman, George E.: *See—*
Tauber, Thomas E.; and Chapman, George E., 4,282,016, Cl. 55-204.000.
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Charity, Herman T., III. Portable substrate etching apparatus and process. 4,281,485, Cl. 51-425.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Coccoli, Joseph D., 4,281,896, Cl. 350-171.000.
Schluntz, Roy A.; and Stemniski, John R., 4,281,555, Cl. 74-5.00R.
Chase, Barry J.; Rushforth, Roy W. E.; and Selman, Gordon J. Method of making an article of bonded metal particles. 4,282,174, Cl. 264-111.000.
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Chavez, Reuben. Golf chipping and pitching device. 4,281,834, Cl. 273-182.00R.
Check Fumigation and Pest Control Limited: *See—*
Jenkins, David L.; and Gibson, James A., 4,281,471, Cl. 43-131.000.
Chemetron Corporation: *See—*
Banks, Kenneth E., 4,282,420, Cl. 219-146.240.
Chemische Werke Huls A.G.: *See—*
Droste, Wilhelm; and Obenaus, Fritz, 4,282,389, Cl. 568-697.000.
Chen, Hsi-Chi. Automobile dirty smoke eliminator. 4,282,017, Cl. 55-247.000.
Cherish, Peter; and Salvador, Louis A., to United States of America, Energy. Fluidized bed injection assembly for coal gasification. 4,282,010, Cl. 48-77.000.
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Franklin, Frederick C.; and Paradis, Stephen G., 4,282,013, Cl. 55-48.000.
O'Rear, Dennis J.; and Mayer, Jerome F., 4,282,085, Cl. 208-120.000.
Platt, James L., Jr., 4,282,343, Cl. 525-336.000.
Schneider, Ronald A., 4,282,040, Cl. 106-287.320.
Ziman, Stephen D., 4,282,028, Cl. 71-90.000.
Chiang, Nei-Ho, to Yang, Yin-Lung, a part interest. Manual hydraulic vise. 4,281,825, Cl. 269-29.000.
Chikama, Toshio, to Machida Endoscope Co., Ltd. Measuring apparatus comprising light optics utilizing cylindrical focusing glass fiber. 4,281,931, Cl. 356-372.000.
Child, Francis W., to Child Laboratories, Inc. Dilator. 4,281,658, Cl. 128-341.000.
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Child, Francis W., 4,281,658, Cl. 128-341.000.
Chiles, William B., to Solar Bar-B-Que Corporation. Solar cooker. 4,281,644, Cl. 126-451.000.
Chludzinski, George R.: *See—*
Melchior, Michael T.; Milliman, George E.; Kim, Chang J.; and Chludzinski, George R., 4,282,193, Cl. 423-223.000.
Choi, Nam S., to ALZA Corporation. Pharmaceutical comprising drug and polymer. 4,282,201, Cl. 424-14.000.
Christof, Emil: *See—*
Bartoschek, Ernst; and Christof, Emil, 4,282,015, Cl. 55-179.000.
Chrysler Corporation: *See—*
Fenn, Gordon W., 4,281,632, Cl. 123-590.000.
Hall, John F., 4,281,863, Cl. 285-382.200.
Ciba-Geigy Corporation: *See—*
Becker, Carl; Mahler, Georges; and Erzinger, Paul, 4,281,999, Cl. 8-527.000.
Green, George E., 4,282,353, Cl. 542-438.000.
Petitpierre, Jean C., 4,281,855, Cl. 282-27.500.
Weis, Claus D., 4,282,358, Cl. 544-101.000.
Cieslak, Leonard K.: *See—*
Cieslak, Stanley; and Cieslak, Leonard K., 4,281,418, Cl. 2-160.000.
Cieslak, Stanley; and Cieslak, Leonard K. Portable furnace for wearing apparel. 4,281,418, Cl. 2-160.000.
Cisterni, Leandro, to S.U.B. Societa Utilizzazione Brevetti S.R.L. Sheet material for general coverings and method of making the same. 4,282,120, Cl. 260-17.40R.
Citizen Watch Company Limited: *See—*
Ichikawa, Singo, 4,282,594, Cl. 368-82.000.
Citrone, Anthony M.; and Pontin, Stephen B., to Reckitt & Colman Products Limited. Aqueous hypochlorite solutions. 4,282,109, Cl. 252-102.000.
Ciuba, Stanley J., to Betz Laboratories, Inc. Hydroquinone as an oxygen scavenger in an aqueous medium. 4,282,111, Cl. 252-178.000.
Clancey, Stephen M., to Eaton Corporation. Fluid coupling device having improved response time. 4,281,750, Cl. 192-58.00B.
Clarke, Beresford N.; and Shedd, Wilfred G., to Metals, Inc. Heat treating apparatus. 4,281,824, Cl. 266-251.000.
Claussen, Lennart; and Boberg, Tore, to Aktiebolaget Bofors. Method of releasing a sprinkler, and a sprinkler head adapted to the method. 4,281,718, Cl. 169-41.000.
Claycomb, Jack R. Throttling mud choke apparatus. 4,281,678, Cl. 137-238.000.
Clear, Theodore E. Methods and apparatus for stacking cementitious reinforced panels. 4,281,952, Cl. 414-82.000.
CM Industries: *See—*
Pedrazzoli, Andrea; and Boveri, Sergio, 4,282,247, Cl. 424-283.000.
Coalex, Inc.: *See—*
Lansberry, John B., 4,281,876, Cl. 299-1.000.
Coates, Clarence A., Jr.: *See—*
Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., 4,282,144, Cl. 260-152.000.
Coccoli, Joseph D., to Charles Stark Draper Laboratory, Inc., The. Shared aperture separator for reciprocal path optical beams. 4,281,896, Cl. 350-171.000.
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Wheldon, Alfred G.; and Cockerill, Peter E., 4,282,259, Cl. 426-231.000.
Cohen, Abraham B.; and Fan, Roxy N., to Du Pont de Nemours, E. I., and Company. Negative-working multilayer photosensitive element. 4,282,308, Cl. 430-271.000.
Cole, Charles F., Jr.: *See—*
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Colpitts, Ralph W.; and Wendt, Jens H., to Polythetics, Inc. Prosthetic denture prepared from polyurethane elastomer. 4,281,992, Cl. 433-212.000.
Colville, William T.: *See—*
Shaffer, John W.; Colville, William T.; and Mecone, David W., 4,282,558, Cl. 362-15.000.
Combustion Engineering, Inc.: *See—*
Bozzuto, Carl R., 4,282,449, Cl. 310-11.000.
Comfort Products, Inc.: *See—*
Giese, Erik O.; Rinehart, Dixie L.; and Gross, Alexander L., 4,281,468, Cl. 36-121.000.
Cominco Ltd.: *See—*
Baggio, Edward G.; and Krauss, Clifford J., 4,282,075, Cl. 204-105.00R.
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Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, 4,282,112, Cl. 252-301.10W.
Goutard, Rene; and Levardon, Raymond, 4,281,691, Cl. 141-1.000.
Communications Patents Limited: *See—*
Aspinwall, John F., 4,282,528, Cl. 343-727.000.
Compagnie Europeenne pour l'Equipement Menager "CEPEM": *See—*
Berthet, Michel; Kermarrec, Jean-Claude; and Ravelet, Robert, 4,281,516, Cl. 62-3.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull: *See—*
Badet, Bernard; and Dekeyser, Yves, 4,281,804, Cl. 242-75.200.
Con-Trol Ltd. Inc.: *See—*
Verwey, Richard H., 4,281,814, Cl. 248-97.000.
Condenser Cleaners Mfg. Co., Inc.: *See—*
Saxon, George E., 4,281,432, Cl. 15-104.06R.
Conoco, Inc.: *See—*
Edmond, Tibor O.; and Bourne, Henry A., Jr., 4,281,723, Cl. 175-76.000.
Conoco, Inc. (formerly Continental Oil Company): *See—*
Hinshaw, Stanley E.; and Cole, Charles F., Jr., 4,281,547, Cl. 73-579.000.
Conrad, Ernst, to Kockums Construction AB. Process for the preparation of a hydrolyzed product from whole grain. 4,282,319, Cl. 435-69.000.
Constantine, Alan. Method and apparatus for sorting bodies of different densities. 4,281,766, Cl. 209-637.000.
Constructions de Clichy: *See—*
Favrot, Paul, 4,281,563, Cl. 74-573.00F.
Continental Agri-Services, Inc.: *See—*
Kallestad, Daniel R.; and Barr, David F., 4,281,489, Cl. 52-192.000.

Cook, Robert D.; Emmett, Robert C., Jr.; Wojcik, Bruce C.; and Baczek, Frank A., to Envirotech Corporation. Slurry electrowinning apparatus. 4,282,082, Cl. 204-237.000.

Cook, William H., Jr. Heat insulation for tanks at cryogenic and higher temperatures, using structural honeycomb with integral heat radiation shields. 4,282,280, Cl. 428-116.000.

Cooper Industries, Inc.: *See*—
Senior, Robert B.; and Karasinski, Frederick, 4,281,442, Cl. 29-33.00M.

Coors Container Company: *See*—
Robertson, King G.; and McAuliffe, Donald C., 4,282,044, Cl. 148-2.000.

Copley, Stephen M.; Rana, Virendra V. S.; and Whelan, James M., to University of Southern California, The. Apparatus for making polycrystalline articles. 4,282,024, Cl. 65-144.000.

Corbett, Marshall J.; and Salina, Salvatore C., to Grumman Aerospace Corporation. Production of synthetic hydrocarbons from air, water and low cost electrical power. 4,282,187, Cl. 422-190.000.

Cordes, Claus: *See*—
Denzinger, Walter; and Cordes, Claus, 4,282,342, Cl. 526-272.000.

Cork, Frank, to Rolls-Royce Limited. Method for removing aluminide coatings from nickel or cobalt base alloys. 4,282,041, Cl. 134-3.000.

Corning Glass Works: *See*—
Lo, Kuang-Hsin K.; and Nolan, Daniel A., 4,282,022, Cl. 65-85.000.
Luderer, Albert A.; and McDonald, Hugh C., 4,282,315, Cl. 435-5.000.
Mazeau, Jean P.; and Seward, Thomas P., III, 4,282,021, Cl. 65-30.00R.
Nigrin, Jaroslava M., 4,282,035, Cl. 106-48.000.

Cornsweet, Tom N., to Rodenstock Instruments Corp. Method and means for analyzing sphero-cylindrical optical systems. 4,281,926, Cl. 356-124.000.

Cosman, Eric R. Single diaphragm pressure-balanced telemetric pressure sensing system. 4,281,666, Cl. 128-748.000.

Cosman, Eric R. Single diaphragm telemetric differential pressure sensing system. 4,281,667, Cl. 128-748.000.

Cottis, Robert A.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,282,453, Cl. 310-335.000.

Coulter Electronics, Inc.: *See*—
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Coulter, Wallace H.: *See*—
Auer, Robert E.; and Coulter, Wallace H., 4,281,924, Cl. 356-73.000.

Coviello, John W., to Westinghouse Electric Corp. Digital magnification system. 4,282,550, Cl. 358-160.000.

Covington, Fred D., to Portaframe, Inc. Portable apparatus for straightening automobile bodies. 4,281,532, Cl. 72-457.000.

Cox, Lawrence A., to Airco, Inc. Lung ventilator. 4,281,651, Cl. 128-204.230.

Cozad, Ronald E.: *See*—
Tucker, John D.; Cozad, Ronald E.; and Kaiser, Robert A., 4,281,722, Cl. 175-57.000.

Cragoe, Edward J., Jr.: *See*—
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,282,365, Cl. 548-252.000.

Cramer, Gregory D.; King, Irvin B.; Sauerbrunn, Robert D.; and Strand, Albert T., to Du Pont de Nemours, E. I., and Company. Additive injection valve. 4,281,935, Cl. 366-174.000.

Crawford, James J.: *See*—
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Crenshaw, Ronnie R.: *See*—
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Crooks, Horatio N.: *See*—
Southgate, Peter D.; and Crooks, Horatio N., 4,282,511, Cl. 340-146.30F.

Crosrol Limited: *See*—
Sullivan, Lawrence G., 4,281,434, Cl. 15-256.510.

Cross, Thomas R., to Xerox Corporation. Stapler arrangement for a copier/finisher. 4,281,920, Cl. 355-75.000.

Crowe, William D., to J. R. Schneider Co., Inc. Filter. 4,282,105, Cl. 210-798.000.

Culver, Richard B.; and Bostick, Francis X., to Dresser Industries, Inc. Dual focused resistivity logging method and apparatus with dynamic range reduction. 4,282,486, Cl. 324-371.000.

Cunningham, John P.; and Szilagyi, Dezso, to General Signal Corporation. Replaceable adjustable butterfly valve seat. 4,281,818, Cl. 251-307.000.

Cunningham, Joseph W.: *See*—
Wing, Lawrence D.; and Cunningham, Joseph W., 4,281,708, Cl. 165-32.000.

Cupples, Barrett L.; and Heilman, William J., to Gulf Research & Development Company. Alpha-olefin oligomer synthetic lubricant. 4,282,392, Cl. 585-10.000.

Custom Concepts, Incorporated: *See*—
Kubiatowicz, James F., 4,281,569, Cl. 82-1.00C.

Cutie, Zonia G.: *See*—
Donate, Felipe A.; and Cutie, Zonia G., 4,282,386, Cl. 568-606.000.

Czerewaty, Frank P., to Cameron Iron Works, Inc. Ball joint. 4,281,861, Cl. 285-265.000.

Dai, Sheng-Hong A.; Lin, Chung-Yuan; and Stuber, Fred A., to Upjohn Company, The. Process for the autoxidation of cyclohexylbenzene to form cyclohexylbenzene hydroperoxide. 4,282,383, Cl. 568-573.000.

D'Amico, John J., to Monsanto Company. N-(Pyridylmethyl)-2-oxobenzothiazoline derivatives and their use as plant growth regulants. 4,282,029, Cl. 71-90.000.

Dan River Incorporated: *See*—
Terpay, John M., 4,282,011, Cl. 51-298.000.

Danielsson, Jan O. Method of forming concrete floors and product of the method. 4,281,496, Cl. 52-612.000.

Danilova, Faina B.: *See*—
Lobachev, Viktor A.; Safronov, Vladimir G.; Danilova, Faina B.; and Lvov, Vladimir N., 4,282,012, Cl. 51-309.000.

Datafile Limited: *See*—
Barber, Donald T.; Pfeffer, George B.; and Olson, Esther E., 4,281,445, Cl. 29-426.500.

Dataproducts Corporation: *See*—
Khan, Sultan W.; Ham, John K.; and Strissel, Richard A., 4,282,583, Cl. 364-900.000.

Datta-Barua, Lohit. Vortex shedding flowmeter. 4,281,553, Cl. 73-861.240.

Daus, Ronald R., to Republic Steel Corporation. Internal door lock security reinforcement and method of assembly. 4,281,479, Cl. 49-503.000.

Davidson, Richard R., to Associated Portland Cement Manufacturers Limited. Paper fillers. 4,282,059, Cl. 162-158.000.

Davidson, Robert S.; and Grieger-Block, Richard A., to Wisconsin Alumni Research Foundation. Preparation of alkylene oxides. 4,282,159, Cl. 260-348.210.

Davidson, Thomas A.; and Griffith, Ronald C., to Pennwalt Corporation. Preparation of 1,2,4,5-tetrahydro-7-alkoxy-(and 7,8-dialkoxy)-3H,3-benzazepines and 3-substituted derivatives thereof from the corresponding phenethylamines. 4,282,146, Cl. 260-239.0BB.

Davies, Pamela M., to Le Carbone (Great Britain) Limited. Pipe joints. 4,281,859, Cl. 285-55.000.

Dayco Corporation: *See*—
Brooks, Alden W., 4,281,785, Cl. 227-120.000.

DBS, Inc.: *See*—
Bowen, James H., 4,281,596, Cl. 101-269.000.

Deboo, Gordon J.; and Devine, David J., to United States of America, National Aeronautics and Space Administration. Test apparatus for locating shorts during assembly of electrical buses. 4,282,479, Cl. 324-51.000.

Declercq, Marc A.: *See*—
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Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., 4,281,967, Cl. 416-145.000.

Deen, Harold E.; Winans, Esther D.; Ryer, Jack; and O'Halloran, Rosemary, to Exxon Research & Engineering Co. Oil-soluble spiro-[cycloalkane-oxazolidines], their preparation and use as additives and chelating agents for functional fluids. 4,282,108, Cl. 252-51.50R.

Deere & Company: *See*—
Hoch, John J., 4,281,732, Cl. 180-19.00H.
Scheuermann, Albert; and Adickes, Henning, 4,281,742, Cl. 181-257.000.

DeFonzo, Alfred P., to United States of America, Navy. Optically tunable resonant structure. 4,282,499, Cl. 333-231.000.

DeGeeter, Melvin J.; and McCall, John M., to Upjohn Company, The. Animal feed and process. 4,282,228, Cl. 424-251.000.

Dekeyser, Yves: *See*—
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Delamotte, Jean C. C.: *See*—
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Delany, John J., to Research Products Corporation. Damper for solar heating systems and the like. 4,281,638, Cl. 126-428.000.

Delbar Products, Inc.: *See*—
O'Connell, Lawrence E.; and Hanisco, Raymond L., 4,281,815, Cl. 248-479.000.

Dell, Harold R.; Holtsman, William L.; Lamasney, Michael V.; and Mortimer, Charles P. L., to Singer Company, The. Aircraft simulator digital audio system. 4,281,994, Cl. 434-49.000.

Dellett, John P.: *See*—
Howard, Vincent M.; Maxey, Carl W.; and Dellett, John P., 4,281,696, Cl. 144-312.000.

DeMaggio, Gregory B.: *See*—
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Demarthe, Jean-Michel; Fossi, Paolo; and Guery, Dominique, to Minemet Recherche. Process for the recovery of uranium contained in phosphated solutions. 4,282,188, Cl. 423-10.000.

Demo, Joseph J., Jr., to Du Pont de Nemours, E. I., and Company. Ductile chromium-containing ferritic alloys. 4,282,291, Cl. 428-683.000.

Dennison Manufacturing Company: *See*—
Fotland, Richard A., 4,282,297, Cl. 430-48.000.

Denzinger, Walter; and Cordes, Claus, to BASF Aktiengesellschaft. Preparation of terpolymers. 4,282,342, Cl. 526-272.000.

DeRienzo, William T., to Harris Data Communications Inc. Metastable detector. 4,282,489, Cl. 328-206.000.

Derweduwen, Joan. Osteosynthesis method and apparatus for reducing a bone fracture. 4,281,649, Cl. 128-92.0BC.

Desgouilles, Henri F. M. Polymer-containing bituminous composition and composite sealing sheet including the same. 4,282,127, Cl. 260-28.5AS.

Detsch, Steven G. Blade locking mechanism. 4,281,990, Cl. 433-144.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Signal delay tone synthesizer. 4,281,574, Cl. 84-1.190.

Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt: *See*—
Onken, Reiner; Mansfeld, Gunter; and Tersteegen, Johannes, 4,281,584, Cl. 91-1.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
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Devine, David J.: *See*—
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Devore, Clyde W., to Heliotropin Engineering Corp. Solar energy collecting system. 4,281,641, Cl. 126-438.000.

DeWinter, Walter F.: *See*—
Laridon, Urbain L.; DeWinter, Walter F.; and Kokelenberg, Hendrik E., 4,282,309, Cl. 430-281.000.

DeWitt, Robert E. Water sprinkler with flat plate pattern control. 4,281,793, Cl. 239-11.000.

Dickason, Allen D.; and Hildebrant, R. Laing, to Lodec, Inc. Vehicle platform scale. 4,281,728, Cl. 177-134.000.

Didek, Stanislav; Fajt, Ludvik; Storek, Jaroslav; Andres, Jiri; Cada, Frantisek; and Markova, Marie, to Vyzkumny ustav bavlnarsky. Frictional open-end spinning method and apparatus. 4,281,507, Cl. 57-58.890.

Didier Engineering GmbH: *See*—
Burkert, Rudolf, 4,282,096, Cl. 210-182.000.
Flockenhaus, Claus; Galow, Manfred; Meckel, Joachim F.; and Joseph, Horst G., 4,282,068, Cl. 202-227.000.
Wagener, Dietrich; Fach, Horst; and Ergun, Hayri, 4,282,066, Cl. 201-6.000.

Diehl GmbH & Co.: *See*—
Meisner, Alfred; Grasser, Hans; and Glasmacher, Peter, 4,282,513, Cl. 340-149.00R.
Weber, Adolf; and Rhau, Siegfried, 4,281,599, Cl. 102-364.000.

Diesel Kiki Co., Ltd.: *See*—
Satoh, Yuji, 4,281,682, Cl. 137-596.170.

Dieterich, Dieter, to Bayer Aktiengesellschaft. Dispersion of aromatic isocyanatosulfonic acid uretdiones in organic polyisocyanates and a process for their preparation. 4,282,147, Cl. 260-239.00A.

Dikstein, Shabtay: *See*—
Mechoulam, Raphael; Lander, Naphtali; and Dikstein, Shabtay, 4,282,248, Cl. 424-299.000.

Dillon, Robert H.: *See*—
Hirt, Theodore A.; and Dillon, Robert H., 4,282,073, Cl. 204-28.000.

Dimino, William. Fountain system including a plurality of wooden barrels. 4,281,794, Cl. 239-20.000.

Dinardo, Joseph R., Jr., to RCA Corporation. Method for fabricating flyleads for video disc styli. 4,282,311, Cl. 430-318.000.

Dinella, Donald; and Wong, Ching-Ping, to Western Electric Co., Inc. Mask for selectively transmitting therethrough a desired light radiant energy. 4,282,314, Cl. 430-413.000.

Discovision Associates: *See*—
Elliott, James E., 4,282,598, Cl. 369-44.000.

Distillers Company (Carbon Dioxide) Limited, The: *See*—
Wheldon, Alfred G.; and Cockerill, Peter E., 4,282,259, Cl. 426-231.000.

Ditzer, Erich, to Bayerische Motoren Werke Aktiengesellschaft. Circuit arrangement for a window-cleaning installation of motor vehicles. 4,282,445, Cl. 307-141.000.

Dixon, Richard B.; and Carr, Peter, to Wilkinson Sword Limited. Razor with removably mounted pivotal cartridge. 4,281,455, Cl. 30-47.000.

Dobson, Robert L., to Goodyear Tire & Rubber Company, The. Method of preparing a self-sealing pneumatic tire. 4,282,052, Cl. 156-79.000.

Doherty, Thomas E.; and Herzog, William F., to Owens-Illinois, Inc. Apparatus to form a flat-topped rim on a thin-walled foam plastic container. 4,281,979, Cl. 425-391.000.

Domoto, Kazushige: *See*—
Hayashi, Kiyozumi; and Domoto, Kazushige, 4,282,064, Cl. 176-73.000.

Donaldson, Charles R.; and Stiles, Claude J., to National Distillers and Chemical Corp. Dual reactor process and apparatus for polymerizing ethylene. 4,282,339, Cl. 526-64.000.

Donate, Felipe A.; and Cutie, Zonia G., to Dow Chemical Company, The. Alkyl, cycloalkyl diethers of (poly)alkylene glycols. 4,282,386, Cl. 568-606.000.

Dornier GmbH: *See*—
Zimmer, Herbert, 4,281,812, Cl. 244-219.000.

Dory, Jacques, to C. G. R.-Ultrasonic. Medical echo sounding apparatus with a wide sector scanning angle. 4,281,661, Cl. 128-660.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See*—
Hayashi, Kiyozumi; and Domoto, Kazushige, 4,282,064, Cl. 176-73.000.

Doub, Ernest L., Jr. Thermal pumping device. 4,281,969, Cl. 417-52.000.

Douglas, Peter H.: *See*—
Glover, Douglas L.; Rubenstein, Roger H.; Douglas, Peter H.; and Bridges, Lee R., 4,281,989, Cl. 433-130.000.

Douglass, Paul W.; and Trotta, Robert A., to Gillette Company, The. Razor handle with a pivotal connection means for an element of a blade cartridge mounted thereon. 4,281,456, Cl. 30-89.000.

Doundoulakis, George J. High efficiency tri-rotor ballistic engine. 4,281,628, Cl. 123-245.000.

Dow Chemical Company, The: *See*—
Donate, Felipe A.; and Cutie, Zonia G., 4,282,386, Cl. 568-606.000.
Olstowski, Franciszek; and Nafziger, John L., 4,282,387, Cl. 568-618.000.
Sherrod, Fred A., 4,282,071, Cl. 203-38.000.

Dowrick, John S., to Beecham Group Limited. Intramammary compositions. 4,282,202, Cl. 424-23.000.

Draber, Wilfried; Reiser, Wolf; Schmidt, Thomas; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Cyclic 1,2-diol benzyl ether compounds. 4,282,388, Cl. 568-660.000.

Dreiseitl, Walter; Kollensperger, Dieter; Salzmann, Theodor; Schlegel, Thomas; and Weigel, Wolf-Dieter, to Siemens Aktiengesellschaft. Rotating field machine drive and method. 4,282,473, Cl. 318-803.000.

Dresser Industries, Inc.: *See*—
Culver, Richard B.; and Bostick, Francis X., 4,282,486, Cl. 324-371.000.
Youmans, Arthur H., 4,282,523, Cl. 340-860.000.

Dressler, Friedrich K., to Harris Corporation. Inking mechanism. 4,281,597, Cl. 101-365.000.

Droste, Wilhelm; and Obenaus, Fritz, to Chemische Werke Huls A.G. Process for the simultaneous manufacture of pure MTBE and a substantially isobutene-free mixture of C_4-hydrocarbons. 4,282,389, Cl. 568-697.000.

Du Bois, Donald W., to PPG Industries, Inc. Electrolytic process utilizing a transition metal-graphite intercalation compound cathode. 4,282,074, Cl. 204-98.000.

Dubro, Inc.: *See*—
Broeg, Helmut, 4,281,684, Cl. 137-625.210.

Ducroquet, Jean-Louis; and Lazareth, Michel, to Merlin Gerin. Ground fault circuit interrupting device. 4,282,500, Cl. 335-18.000.

Dudek, Edmund C., to Thor Power Tool Company. Transducer for indicating torque. 4,281,538, Cl. 73-862.210.

Dudzinski, John R.; and Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and acetylsalicylic acid, derivative or salt thereof. 4,282,215, Cl. 424-232.000.

Duggan, Stephen R., to Medtronic, Inc. Implantable telemetry transmission system for analog and digital data. 4,281,664, Cl. 128-696.000.

Duke University, Inc.: *See*—
Jobsis, Frans F., 4,281,645, Cl. 128-633.000.

Dunn, Charles S.; and Propster, Mark A., to Owens-Corning Fiberglas Corporation. Glass manufacturing process with in-situ colemanite calcination and pollution abatement features. 4,282,019, Cl. 65-27.000.

Dunn, Howard J.: *See*—
Evich, Vince J.; Brown, Gerald C.; and Dunn, Howard J., 4,282,256, Cl. 426-7.000.

Dunn, Patrick F., to United States of America, Energy. Apparatus for measuring the local void fraction in a flowing liquid containing a gas. 4,282,481, Cl. 324-65.00P.

Du Pont de Nemours, E. I., and Company: *See*—
Anthony, John D., Jr.; Keegan, John J., Jr.; and Lee, Jerald D., 4,282,431, Cl. 250-236.000.
Buehler, Oscar R.; and Porter, Harold F., 4,282,381, Cl. 564-498.000.
Caruso, Paul P., 4,282,344, Cl. 528-51.000.
Cohen, Abraham B.; and Fan, Roxy N., 4,282,308, Cl. 430-271.000.
Cramer, Gregory D.; King, Irvin B.; Sauerbrunn, Robert D.; and Strand, Albert T., 4,281,935, Cl. 366-174.000.
Demo, Joseph J., Jr., 4,282,291, Cl. 428-683.000.
Dudzinski, John R.; and Schmidt, William K., 4,282,215, Cl. 424-232.000.
McLaughlin, Joseph E., 4,282,124, Cl. 260-22.00A.
Reeves, James W.; Sylvester, Robert W.; and Wells, David F., 4,282,185, Cl. 422-142.000.
Tocker, Stanley, 4,282,209, Cl. 424-81.000.
Yates, Richard A., 4,282,323, Cl. 435-140.000.

Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, to Smith Kline & French Laboratories Limited. Amidino and guanidino phosphonates. 4,282,213, Cl. 424-200.000.

Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds to inhibit H-2 histamine receptors. 4,282,221, Cl. 424-249.000.

Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., to Smith Kline & French Laboratories Limited. Alkoxy-pyridyl substituted alkanes. 4,282,224, Cl. 424-250.000.

Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Certain heterocyclic-methylthioalkyl guanidine derivatives. 4,282,234, Cl. 424-269.000.

Durckheimer, Walter: *See*—
Bormann, Dieter; Durckheimer, Walter; and Schrinner, Elmar, 4,282,220, Cl. 424-246.000.

Duret, Maurice L.; Lamarche, Bernard L. J.; Declercq, Marc A.; and Martin, Robert D., to Societe Nationale Industrielle Aerospatiale. Multi-blade propellers. 4,281,966, Cl. 416-134.00A.

Durr, Helmut E.: *See*—
Bevers, Robert C.; Durr, Helmut E.; and Mock, George E., 4,281,617, Cl. 118-68.000.

Dworsky, Lawrence N.: *See*—
Wakat, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., 4,282,454, Cl. 310-348.000.

Dyckerhoff & Widmann Aktiengesellschaft: *See*—
Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans, 4,282,036, Cl. 106-97.000.
Dzuban, Louis. Apparatus for indicating maximum resolution for projected images. 4,281,927, Cl. 356-124.000.
E. C. H. Will (GmbH & Co.): *See*—
Lemburg, Jorn-Uwe, 4,281,690, Cl. 140-71.00R.
E. R. Squibb & Sons, Inc.: *See*—
Hoehn, Hans, 4,282,230, Cl. 424-258.000.
Ondetti, Miguel A., 4,282,235, Cl. 424-270.000.
Vogt, B. Richard; and Magbanua, Ligaya G., 4,282,226, Cl. 424-251.000.
Earing, Mason H., to General Electric Company. Coil impregnant with modified asphaltite base. 4,282,038, Cl. 106-273.00N.
Easterly, Donald O., to Eastman Kodak Company. Web transport apparatus. 4,281,807, Cl. 242-206.000.
Eastman Kodak Company: *See*—
Brust, David P.; Hamilton, Lewis R.; and Wilkes, Glenn R., 4,282,305, Cl. 430-213.000.
Chang, Jack C.; and Sandifer, James R., 4,282,079, Cl. 204-195.00G.
Easterly, Donald O., 4,281,807, Cl. 242-206.000.
Sloan, Cephas H., 4,281,998, Cl. 8-129.000.
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukeinen, Joseph Y., 4,282,354, Cl. 542-441.000.
Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., 4,282,144, Cl. 260-152.000.
Eaton Corporation: *See*—
Clancey, Stephen M., 4,281,750, Cl. 192-58.00B.
Ebauches S.A.: *See*—
Gharadjedaghi, Fereydoun, 4,281,903, Cl. 350-349.000.
Eberly, Paul E., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,282,086, Cl. 208-139.000.
Echte, Adolf: *See*—
Walter, Manfred; Stein, Dieter; Fahrbach, Gerhard; Jung, Rudolf; and Echte, Adolf, 4,282,334, Cl. 525-53.000.
Eckels, Phillip W., to Westinghouse Electric Corp. Dynamoelectric machine with cryostable field winding. 4,282,450, Cl. 310-52.000.
Edelman, Leonard E.; and Runk, Robert H., to Westinghouse Electric Corp. Liquid modified epoxy resins. 4,282,122, Cl. 260-18.0EP.
Edhlund, Ronald D., to American Photo-Graphics Corporation. Method of making pressure-sensitive transfer sheets. 4,282,310, Cl. 430-309.000.
Edmond, Tibor O.; and Bourne, Henry A., Jr., to Conoco, Inc. Control system for a drilling apparatus. 4,281,723, Cl. 175-76.000.
Edo-Aire Mitchell: *See*—
Nixon, John M., 4,281,811, Cl. 244-178.000.
Eesley, Gary L.; DeMaggio, Gregory B.; and Buchholz, Jeffrey C., to General Motors Corporation. Apparatus for measuring soot concentration in engine oil. 4,281,533, Cl. 73-15.00R.
Egerer, Paul K. Apparatus for the production of energy and method for utilizing the pressure and/or temperature conditions in deep waters. 4,281,514, Cl. 60-641.00R.
Egosi, Dan. Energy conversion method with water recovery. 4,282,070, Cl. 203-11.000.
Egraz, Jean-Bernard: *See*—
Bousquet, Gilles; Egraz, Jean-Bernard; Rambert, Andre; and Ravet, Georges, 4,282,140, Cl. 260-42.520.
Ehmann, Hans; Bieber, Walter; and Baier, Hans, to Gesipa Blindniettechnik GmbH. Blind riveter with pneumatic rivet-core disposal. 4,281,531, Cl. 72-391.000.
Ehrlich, Donald J.; and Blout, Bennett O., to Evans Products Company. Vehicle convertible double deck system. 4,281,870, Cl. 296-24.00R.
Ehrmann, Wolfgang: *See*—
Winter, Claus; and Ehrmann, Wolfgang, 4,281,435, Cl. 16-94.00R.
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Eiting, Hermann: *See*—
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Eli Lilly and Company: *See*—
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Lavagnino, Edward R.; Pike, Andrew J.; and Campbell, Jack B., 4,282,170, Cl. 260-465.00D.
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Wegener, Howard W., 4,282,300, Cl. 430-146.000.
El Khadem, Hassan S.; Audichya, Thakur D.; and Kloss, John, to Michigan Technological University, Board of Control of. Crystalline ribofuranosyl halides and other derivatives and methods for producing same. 4,282,349, Cl. 536-4.000.
Elkin, Bernard P.; and Mickowski, John. Electronic converter. 4,282,514, Cl. 235-310.000.
Elliott, James E., to Discovision Associates. Video disc read back scanner. 4,282,598, Cl. 369-44.000.
Elms, Robert T.; and Vercellotti, Leonard C., to Westinghouse Electric Corp. Indicator diagram based AC electric energy meter. 4,282,576, Cl. 364-483.000.
Emalfarb, Mark A.; Emalfarb, Sy; and Reum, Donald J. Landscaping bed divider. 4,281,473, Cl. 47-33.000.
Emalfarb, Sy: *See*—
Emalfarb, Mark A.; Emalfarb, Sy; and Reum, Donald J., 4,281,473, Cl. 47-33.000.
Emery Industries, Inc.: *See*—
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Emmett, Robert C., Jr.: *See*—
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Engelbach, Heinz; and Sprague, Michael J., to BASF Aktiengesellschaft. Preparation of glyoxal from ethylene glycol. 4,282,374, Cl. 568-471.000.
Engelsmann, Dieter; Nicko, Reinhard; Lippl, Leo; and Maas, Dieter, to Agfa-Gevaert AG. Motorized film-transporting mechanism. 4,281,911, Cl. 354-173.000.
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, to Voest-Alpine Aktiengesellschaft. Tiltable converter arrangement. 4,281,823, Cl. 266-246.000.
Enloe, Kenneth M.: *See*—
Frick, Richard H.; and Enloe, Kenneth M., 4,281,619, Cl. 118-325.000.
Ennis, Robert E., to Linatex Corporation of America. Process for cleaning fine coal. 4,282,088, Cl. 209-17.000.
Enterprise d'Equipment Mecaniques Hydrauliques E.M.H.: *See*—
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Cook, Robert D.; Emmett, Robert C., Jr.; Wojcik, Bruce C.; and Baczek, Frank A., 4,282,082, Cl. 204-237.000.
Erckel, Rudiger; and Jurges, Peter, to Hoechst Aktiengesellschaft. Process for the manufacture of bis-benzoxazolyl-stilbene compounds. 4,282,355, Cl. 542-459.000.
Ergun, Hayri: *See*—
Wagener, Dietrich; Fach, Horst; and Ergun, Hayri, 4,282,066, Cl. 201-6.000.
Erickson, John W., to Kobe, Inc. High pressure centrifugal pump. 4,281,962, Cl. 415-89.000.
Erickson, Norman R. Dental appliance. 4,281,986, Cl. 433-93.000.
Erikson, Kenneth R., to North American Philips Corporation. Curved array of sequenced ultrasound transducers. 4,281,550, Cl. 73-626.000.
Erzinger, Paul: *See*—
Becker, Carl; Mahler, Georges; and Erzinger, Paul, 4,281,999, Cl. 8-527.000.
Esso Resources Canada Ltd.: *See*—
Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.
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Leleu, Jean, 4,281,707, Cl. 164-292.000.
Ethen, John L., to Minnesota Mining and Manufacturing Company. Long-lived heavy-duty pavement marking. 4,282,281, Cl. 428-149.000.
Eudy, William W., to International Paper Company. Organosilicon quaternary ammonium antimicrobial compounds. 4,282,366, Cl. 556-413.000.
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Draber, Wilfried; Reiser, Wolf; Schmidt, Thomas; Eue, Ludwig; and Schmidt, Robert R., 4,282,388, Cl. 568-660.000.
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Evans Products Company: *See*—
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Eventide Clockworks, Inc.: *See*—
Factor, Richard, 4,282,606, Cl. 455-620.000.
Everett, Seth L., Jr., to United States of America, Army. Display/-memory/control system for forward observer source data. 4,282,522, Cl. 340-711.000.
Everts & van der Weyden Exploitatiemaatschappij Ewem N.V.: *See*—
Lubbers, Marius H., 4,281,529, Cl. 72-215.000.
Evetts, Samuel G.; Lawson, John D.; and Penn, William D., to Texas Instruments Incorporated. Correlation ranging. 4,282,589, Cl. 367-90.000.
Evich, Vince J.; Brown, Gerald C.; and Dunn, Howard J., to Star-Kist Foods, Inc. Preparation of an animal feed supplement from fish cannery process waste water. 4,282,256, Cl. 426-7.000.
Ex-Cell-O Corporation: *See*—
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Hensey, Warren R., 4,281,787, Cl. 229-17.00G.
Exxon Research & Engineering Co.: *See*—
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Eberly, Paul E., Jr., 4,282,086, Cl. 208-139.000.
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S.; and Klein, Robert R., 4,282,130, Cl. 260-29.6SQ.
Melchior, Michael T.; Milliman, George E.; Kim, Chang J.; and Chludzinski, George R., 4,282,193, Cl. 423-223.000.
Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A., 4,282,194, Cl. 423-223.000.
Eymann, Steven W.; Fried, Mark A.; and Harris, Thomas L., to Motorola Inc. Linear Bessel ranging radar. 4,282,524, Cl. 343-14.000.

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Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,281,823, Cl. 266-246.000.

F. J. Burrus & Cie.: *See—*
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Wagener, Dietrich; Fach, Horst; and Ergun, Hayri, 4,282,066, Cl. 201-6.000.

Factor, Richard, to Eventide Clockworks, Inc. Broadcast delay line. 4,282,606, Cl. 455-620.000.

Fahrbach, Gerhard: *See—*
Walter, Manfred; Stein, Dieter; Fahrbach, Gerhard; Jung, Rudolf; and Echte, Adolf, 4,282,334, Cl. 525-53.000.

Faile, Samuel P., to Purdue Research Foundation. Vapor growth of mercury iodide for use as high energy detectors. 4,282,057, Cl. 156-614.000.

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Didek, Stanislav; Fajt, Ludvik; Storek, Jaroslav; Andres, Jiri; Cada, Frantisek; and Markova, Marie, 4,281,507, Cl. 57-58.890.

Fan, Roxy N.: *See—*
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Farley, David L., to Halliburton Company. Bypass valve. 4,281,715, Cl. 166-317.000.

Farley, James E.; and Scarborough, Irvin R. Material weighing and bucket charging apparatus. 4,281,729, Cl. 177-139.000.

Farmer, Peter H.: *See—*
Hoagland, John C.; Farmer, Peter H.; and Carabetta, Rocco M., Jr., 4,281,980, Cl. 425-461.000.

Farrar, Alfred O.; and Hochberg, Howard M., to Roche Medical Electronics Inc. Applying and securing percutaneous or transcutaneous probes to the skin especially for fetal monitoring. 4,281,659, Cl. 128-635.000.

Farrell, Robert E., to Package Machinery Company. Apparatus for setting a clamping load. 4,281,977, Cl. 425-149.000.

Farrell, Robert E., to Package Machinery Company. Injection molding machine with regenerative feed system. 4,282,176, Cl. 264-328.130.

Favrot, Paul, to Constructions de Clichy. Device for eliminating residual unbalance from a rotating element. 4,281,563, Cl. 74-573.00F.

Fearing, Ralph B.; and Weil, Edward D., to Stauffer Chemical Company. Filled unsaturated polyester resin compositions. 4,282,133, Cl. 260-30.60R.

Feibelman, Jeffrey A., to A & H Mfg. Co. Removable identification panel for earring cards. 4,281,469, Cl. 40-16.400.

Feldman, Daniel W., to Standard Oil Company (Ohio). Die assembly providing uniform pressure and flow. 4,281,981, Cl. 425-467.000.

Feldstein, Nathan. Dispersions for activating non-conductors for electroless plating. 4,282,271, Cl. 427-98.000.

Felix, Raymond A., to Stauffer Chemical Company. Biocidal mercaptopyridine haloacrylylnitrile compounds. 4,282,231, Cl. 424-263.000.

Fender, C. Leo. Bridge for stringed instruments. 4,281,576, Cl. 84-298.000.

Fenimore, David C. Apparatus for transferring sample on flexible sheet to chromatographic plate. 4,281,618, Cl. 118-202.000.

Fenn, Gordon W., to Chrysler Corporation. Throttle body and mixing tube. 4,281,632, Cl. 123-590.000.

Fenske, John W.: *See—*
Simons, John R.; and Fenske, John W., 4,282,413, Cl. 200-81.90M.

Fernicola, Robert C.: *See—*
Hardwick, Steven F.; and Fernicola, Robert C., 4,282,569, Cl. 363-87.000.

Ferretti, Romeo, to PRO SAC S.p.A. Polymer composition with a polyester basis and utilization thereof for the production of transparent flexible laminates with inert and/or fibrous filling materials. 4,282,125, Cl. 260-22.0CB.

Ferri, Joseph E.; Gundersen, Allan A.; and Seelig, Oliver N., to SKG Industries, Inc. Mixer. 4,281,937, Cl. 366-303.000.

Ferriera, Cress R., to Energy Wise, Inc. Solar powered cooling device. 4,281,515, Cl. 62-2.000.

Fett, Kurt: *See—*
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,282,369, Cl. 560-25.000.

Fiegl, George; and Torbet, Walter, to Siltec Corporation. Continuous replenishment of molten semiconductor in a Czochralski-process, single-crystal-growing furnace. 4,282,184, Cl. 422-106.000.

Filoramo, Richard F. Film safe. 4,282,441, Cl. 250-515.000.

Filter Specialists, Inc.: *See—*
Morgan, Howard W., Jr., 4,282,098, Cl. 210-238.000.

Finsterwalder, Klemens: *See—*
Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans, 4,282,036, Cl. 106-97.000.

Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans, to Dyckerhoff & Widmann Aktiengesellschaft. Flowable concrete mixture. 4,282,036, Cl. 106-97.000.

Fisch, Michael H.: *See—*
Liauw, Koei-Liang; and Fisch, Michael H., 4,282,165, Cl. 260-429.700.
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Fischer, Michael C., to Hewlett-Packard Company. Method and apparatus for phase detection having a narrow dead band and a linear output. 4,282,482, Cl. 324-83.00A.

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Nissen, Peter; Kiene, Wilfried; and Appel, Eggert, 4,281,552, Cl. 73-861.120.

Fishe, Gerald R. A. Vaporizable liquid injection system and method for internal combustion engine. 4,281,626, Cl. 123-25.00C.

Fisher, Albert W., to RCA Corporation. Method for determining silicon content in layers of aluminum and silicon. 4,282,266, Cl. 427-9.000.

Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, to Commissariat a l'Energie Atomique. Ruthenium recovery process by solvent extraction. 4,282,112, Cl. 252-301.10W.

Flaherty, Robert: *See—*
Kim, Chang-Kyo; and Flaherty, Robert, 4,281,841, Cl. 277-236.000.

Flaig, Hans; Allgaier, Jurgen; and Assmus, Friedrich, to Gebruder Junghans, GmbH. Electronic clock circuitry for a clock having chimes or an alarm. 4,282,593, Cl. 368-63.000.

Flavel, Malcolm D., to Allis-Chalmers Corporation. Operation of associated crushing plant and mill. 4,281,800, Cl. 241-24.000.

Fleischer, Jean C.: *See—*
Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., 4,282,144, Cl. 260-152.000.

Fletcher, Taylor C. Photometric system including a time-division optical attenuator. 4,281,897, Cl. 350-274.000.

Flockenhaus, Claus; Galow, Manfred; Meckel, Joachim F.; and Joseph, Horst G., to Didier Engineering GmbH. Apparatus for the transfer and quenching of coke. 4,282,068, Cl. 202-227.000.

Flora, Laurence P., to Burroughs Corporation. Three level data transmission system having means for seeking a constant average value for the transmitted signals. 4,282,601, Cl. 375-20.000.

Flora, Lawrence; and Francis, Marion D., to Procter & Gamble Company, The. Phenylacetate anti-inflammatory composition. 4,282,214, Cl. 424-204.000.

Florin, Robert E. Mercury switch for monitoring position of patient. 4,282,412, Cl. 200-52.00R.

FMC Corporation: *See—*
Fowler, William E., Jr., 4,281,764, Cl. 209-557.000.
Guiliano, Basil A.; Pfeffer, Henry A.; and Kurtz, Andrew D., 4,282,359, Cl. 544-192.000.
Houston, Robert K.; and Meador, James, 4,281,933, Cl. 356-425.000.
Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,282,260, Cl. 426-264.000.

Fogel, Sidney J.: *See—*
Katz, Jerome; and Fogel, Sidney J., 4,282,067, Cl. 202-180.000.

Fogelberg, Mark J., to Borg-Warner Corporation. Automatic locking clutch. 4,281,749, Cl. 192-36.000.

Foley, James W., to Polaroid Corporation. Novel triarylmethane compounds. 4,282,160, Cl. 260-388.000.

Foody, Patrick. Silo. 4,281,490, Cl. 52-236.100.

Forberg, Horst; and Radelow, Wolfgang, to Krone GmbH. Line telecommunications cable end system. 4,281,885, Cl. 339-14.00R.

Ford Aerospace & Communications Corp.: *See—*
Lewis, I. Earl, Jr., 4,281,900, Cl. 350-292.000.

Ford Motor Company: *See—*
Grittner, Heinz; and Giese, Ralf, 4,281,871, Cl. 296-65.00R.

Forenade Fabriksverken: *See—*
Arnell, Claes G., 4,281,600, Cl. 102-489.000.

Forest Engineering Research Institute of Canada: *See—*
Moulson, Donald C., 4,281,693, Cl. 144-34.00R.

Forkner, John H. Method and apparatus for the manufacture of formed edible products and products resulting therefrom. 4,282,258, Cl. 426-100.000.

Formica, Vincent A.: *See—*
Torok, Steve F.; Formica, Vincent A.; and Lange, George P., 4,282,585, Cl. 367-2.000.

Forrest, John W.; and Livingstone, Robert D., to Bowmar/Ali, Inc. Fiber optic attenuation simulator. 4,281,925, Cl. 356-73.100.

Forsyth, Bruce A.: *See—*
McGarry, Errol J.; and Forsyth, Bruce A., 4,282,390, Cl. 568-720.000.

Fortmann, Hermann, to Olympia Werke AG. Electrophotographic copier permitting a toner dispensing cassette to be subsequently employed as a residual toner receptacle. 4,281,918, Cl. 355-3.00R.

Fossi, Paolo: *See—*
Demarthe, Jean-Michel; Fossi, Paolo; and Guery, Dominique, 4,282,188, Cl. 423-10.000.

Fotland, Richard A., to Dennison Manufacturing Company. Charge transfer imaging. 4,282,297, Cl. 430-48.000.

Four Star Corporation: *See—*
Ingram, Charles E., 4,281,783, Cl. 224-325.000.

Fowler, William E., Jr., to FMC Corporation. Sorting apparatus for potatoes and the like. 4,281,764, Cl. 209-557.000.

FRAC, Inc.: *See—*
Hadlock, Fred, 4,281,710, Cl. 165-142.000.

Fraleigh, M. Foster. Variable volume sample cutter and method of use. 4,281,546, Cl. 73-864.440.

Francis, Marion D.: *See—*
Flora, Lawrence; and Francis, Marion D., 4,282,214, Cl. 424-204.000.

Francois, Abel: *See—*
Guillemette, Armand; and Francois, Abel, 4,282,161, Cl. 260-397.100.

Frank, Lothar: *See—*
Schock, Karl; and Frank, Lothar, 4,281,492, Cl. 52-309.900.

Franke, Kurt, to Siemens Aktiengesellschaft. X-Ray diagnostic generator with an mAs relay. 4,282,432, Cl. 250-322.000.

Franklin, Frederick C.; and Paradis, Stephen G., to Chevron Research Company. Vacuum pump operation in a maleic anhydride recovery system. 4,282,013, Cl. 55-48.000.

Franzen, Roger W.; Greber, Gerald; and Rieken, William C., to General Foods Corporation. Dog food of improved acceptability. 4,282,254, Cl. 426-2.000.
Freitag, Herbert; Schnitzius, Klaus; Muller, Martin; and Schafer, Willi, to Stabilus GmbH. Electrically conductive pneumatic spring. 4,281,884, Cl. 339-9.00R.
Frentzel-Beyme, Johannes, to Palitex Project Company GmbH. Yarn brake mechanism. 4,281,508, Cl. 57-279.000.
Frezzolini Electronics, Inc.: *See*—
Frezzolini, James; and Crawford, James J., 4,282,476, Cl. 320-46.000.
Frezzolini, James; and Crawford, James J., to Frezzolini Electronics, Inc. Variable pressure control switch for battery charging circuit. 4,282,476, Cl. 320-46.000.
Frick, Richard H.; and Enloe, Kenneth M., to Kimberly-Clark Corporation. Method for applying viscous fluid to stock and rotary valve for use in same. 4,281,619, Cl. 118-325.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See*—
Helms, Horst, 4,282,586, Cl. 367-13.000.
Fried, Mark A.: *See*—
Eymann, Steven W.; Fried, Mark A.; and Harris, Thomas L., 4,282,524, Cl. 343-14.000.
Fried, Peter: *See*—
Swersey, Burt L.; and Fried, Peter, 4,281,730, Cl. 177-144.000.
Friedman, S. Jack, to O.M.I. Corporation of America. Interconnected, adjustable zoom lens and reticle utilized in lens systems for stereoplotter. 4,281,923, Cl. 356-2.000.
Friese, Karl-Hermann: *See*—
Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, 4,282,080, Cl. 204-195.00S.
Frischmann, Peter G.; Lubórsky, Fred E.; and Tompkins, Russell E., to General Electric Company. Method of making permanent magnets and product. 4,282,046, Cl. 148-121.000.
Frischmann, Peter G.: *See*—
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,281,706, Cl. 164-463.000.
Fritsche, Joel L.: *See*—
Siedenburg, Juergen; and Fritsche, Joel L., 4,282,397, Cl. 174-92.000.
Fritz, Walter: *See*—
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Froberg, Magnus L., to Owens-Corning Fiberglas Corporation. Glass manufacturing process with in-situ colemanite calcination. 4,282,018, Cl. 65-27.000.
Frohberg, Gunther: *See*—
Kuhlen, Ernst; and Frohberg, Gunther, 4,281,586, Cl. 91-52.000.
Frommer, Werner; and Schmidt, Delf, to Bayer Aktiengesellschaft. Production of 1-desoxynojirimicin. 4,282,320, Cl. 435-84.000.
Frosch, Robert A.: *See*—
Gustincic, Jacob J., deceased; and Frosch, Robert A., 4,282,525, Cl. 343-100.0ME.
Fuchs, Werner: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,282,027, Cl. 71-76.000.
Fuelling, William, Jr.; and Seyerle, Carl E., to Outboard Marine Corporation. Filament mower with filament advancing mechanism. 4,281,505, Cl. 56-12.700.
Fugent, Elmer G.; Fugent, Ruby M.; Kraus, Shirley; and Kraus, Wolfgang. Bathroom mixing device. 4,281,796, Cl. 239-310.000.
Fugent, Ruby M.: *See*—
Fugent, Elmer G.; Fugent, Ruby M.; Kraus, Shirley; and Kraus, Wolfgang. 4,281,796, Cl. 239-310.000.
Fuhr, Bryan J.; and Liu, Joseph K., to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; PanCanadian Petroleum Limited; Esso Resources Canada Ltd.; Canada-Cities Service, Ltd.; and Gulf Canada Resources Inc. Method for controlling flocculant addition to tar sand tailings. 4,282,103, Cl. 210-709.000.
Fuji Photo Film Co., Ltd.: *See*—
Kudo, Yoshio; Iwasa, Masakazu; and Kato, Hisashi, 4,281,622, Cl. 118-653.000.
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Noguchi, Masaru, 4,281,889, Cl. 350-6.800.
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.
Watanabe, Toshiyuki; Hirose, Takeshi; Yagihara, Morio; and Yokota, Yukio, 4,282,312, Cl. 430-384.000.
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Uemura, Toshio; Kagabu, Hiroshi; Arisaki, Kenji; Kajimoto, Noboru; Akatsuka, Shinshi; and Fujimoto, Takuaki, 4,281,605, Cl. 110-245.000.
Fujimoto, Yasuo; and Yamabe, Shigeru, to Nippon Chemiphar Co., Ltd. Dibenzothiepin derivatives and a process for producing the same. 4,282,245, Cl. 424-275.000.
Fujishiro, Yuji, to Kabushiki Kaisha Tokyo Kikai Seisakusho. Multiple-purpose offset rotary printing press. 4,281,595, Cl. 101-177.000.
Fujita, Kazunori; Uno, Shigeo; Takeuchi, Seizi; and Yamashita, Hisao, to Hitachi, Ltd. Process for preparing inorganic particulate adsorbent and process for treating nuclear reactor core-circulating water. 4,282,092, Cl. 210-682.000.
Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, to Matsushita Electric Industrial Co., Ltd. Apparatus for humidity detection. 4,282,480, Cl. 324-61.00R.
Fujitsu Limited: *See*—
Ihara, Masaru; and Jifuku, Masayuki, 4,282,543, Cl. 357-54.000.
Nozaki, Takao; and Ito, Takashi, 4,282,270, Cl. 427-93.000.
Fujiwara, Tugumasa. Method for fixing pervenous electrode in atrial pacing and device therefor. 4,281,660, Cl. 128-642.000.
Fukuda, Hideki; Shiotani, Takeshi; and Okada, Wataru, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Apparatus for cultivating aerobic microorganisms and process for cultivation using the same. 4,282,328, Cl. 435-255.000.
Fukunaga, Masao; Niino, Fusao; and Nonoguchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Foam bathing apparatus. 4,281,423, Cl. 4-537.000.
Fukunaga, Shoichi: *See*—
Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.
Fukuyama, Toshifumi: *See*—
Hatten, Hideaki; Onji, Norio; Tsujino, Koichi; and Fukuyama, Toshifumi, 4,282,430, Cl. 250-221.000.
Fuller, George C. Insulating enclosure for disappearing stairway. 4,281,743, Cl. 182-46.000.
Fullmann, Marius: *See*—
Silber, Dieter; Fullmann, Marius; and Winter, Wolfgang, 4,282,542, Cl. 357-38.000.
Funk, James E., to Alfred University Research Foundation Inc. Coal-water slurry and method for its preparation. 4,282,006, Cl. 44-51.000.
Furukawa Electric Co., Ltd., The: *See*—
Irie, Shin-ichi; Uesugi, Kenji; and Kimura, Hitoshi, 4,282,333, Cl. 525-6.000.
Furukawa, Hisao: *See*—
Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, 4,282,336, Cl. 525-102.000.
G. D. Searle & Co.: *See*—
Mueller, Richard A., 4,282,158, Cl. 260-347.800.
Gaeckle, Fred J.; and Butterfield, John L., to General Electric Company. Lubrication system for high speed spline connection and bearing. 4,281,942, Cl. 403-38.000.
Gaiser, Robert F.; and Stone, Samuel E., to Bendix Corporation, The. Back-to-back proportioning valve. 4,281,880, Cl. 303-6.00C.
Galbraith, Lee K., to United States of America, Energy. Flash protection controller. 4,282,429, Cl. 250-214.0RC.
Galbraith, Lyle D.: *See*—
Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, 4,281,621, Cl. 118-500.000.
Gale, Robert M.: *See*—
Shell, John W.; and Gale, Robert M., 4,281,654, Cl. 128-260.000.
Gall, Rudi: *See*—
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Hebold, Gottfried, 4,282,212, Cl. 424-200.000.
Gallo, Joseph S. Fresh flower holder. 4,281,474, Cl. 47-58.000.
Galow, Manfred: *See*—
Flockenhaus, Claus; Galow, Manfred; Meckel, Joachim F.; and Joseph, Horst G., 4,282,068, Cl. 202-227.000.
Gandini, Alberto: *See*—
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Ganellin, Charon R.: *See*—
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,282,221, Cl. 424-249.000.
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,282,224, Cl. 424-250.000.
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,282,234, Cl. 424-269.000.
Garcia-Crespo, Jose T. Hydraulic apparatus for producing impacts. 4,281,587, Cl. 91-290.000.
Garrett Corporation, The: *See*—
La Grone, Charles H., 4,281,509, Cl. 60-39.020.
Garrett, William R., to Smith International, Inc. Drilling head. 4,281,724, Cl. 175-195.000.
Garrett, William R., to Smith International, Inc. Drill string splined resilient tubular telescopic joint for balanced load drilling of deep holes. 4,281,726, Cl. 175-321.000.
Garrity, John J. Bag holder. 4,281,813, Cl. 248-97.000.
Gaudriot, Lionel; and Mercusot, Michel, to Societe pour la Mesure et le Traitement des Vibrations et du Bruit-Metravib. Apparatus for far-field directional pressure evaluation. 4,281,551, Cl. 73-647.000.
Gauthier, John A.; and Shaver, David M., to GTE Automatic Electric Labs Inc. Ringing signal generator. 4,282,410, Cl. 179-84.00R.
Gauthier, Michel: *See*—
Chamberland, Andre M.; and Gauthier, Michel, 4,282,078, Cl. 204-195.00S.
Gaylord, Edson C., to Gaylord Industries, Inc. Kitchen ventilator with inlet throat choke attachments. 4,281,635, Cl. 126-299.00D.
Gaylord Industries, Inc.: *See*—
Gaylord, Edson C., 4,281,635, Cl. 126-299.00D.
Gaylord, Norman G.: *See*—
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,207, Cl. 424-78.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,208, Cl. 424-78.000.
Gebruder Adams Armaturen u. Apparate GmbH & Co. K.G.: *See*—
Adams, Horst; and Koenen, Rudolf, 4,281,817, Cl. 251-305.000.
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Flaig, Hans; Allgaier, Jurgen; and Assmus, Friedrich, 4,282,593, Cl. 368-63.000.

Gebruder Thonet AG: *See—*
Lange, Gerd, 4,281,602, Cl. 108-161.000.

Gehman, Roland P.: *See—*
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Geier, Heinz: *See—*
Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, 4,282,080, Cl. 204-195.00S.

Geigert, John: *See—*
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Geisen, Karl: *See—*
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Regitz, Gunter, 4,282,239, Cl. 424-274.000.

General Battery Corporation: *See—*
Stewart, Jimmy L., 4,282,292, Cl. 429-93.000.

General Dynamics, Pomona Division: *See—*
Reavill, Joseph A., 4,282,077, Cl. 204-192.00E.
Speicher, John M., 4,282,529, Cl. 343-765.000.
Winderman, Jay B.; and Kuffer, Fernand B., 4,282,527, Cl. 343-725.000.

General Electric Company: *See—*
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Earing, Mason H., 4,282,038, Cl. 106-273.00N.
Frischmann, Peter G.; Luborsky, Fred E.; and Tompkins, Russell E., 4,282,046, Cl. 148-121.000.
Gaeckle, Fred J.; and Butterfield, John L., 4,281,942, Cl. 403-38.000.
Hanson, James M.; and Bradley, Irving, 4,282,565, Cl. 362-267.000.
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,281,706, Cl. 164-463.000.
Mark, Victor; and Wilson, Phillip S., 4,282,134, Cl. 260-30.80R.
Meeks, Fredrick T., 4,281,727, Cl. 177-128.000.
Nelson, John D., 4,282,345, Cl. 528-88.000.
Payne, Thomas R.; and Baker, Alfred L., 4,282,422, Cl. 219-486.000.
Peil, William; and McFadyen, Robert J., 4,282,462, Cl. 315-46.000.
Quinn, Clayton B.; and Wilson, Charles A., II, 4,282,391, Cl. 568-726.000.
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General Foods Corporation: *See—*
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General Mills, Inc.: *See—*
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General Motors Corporation: *See—*
Blaser, Dwight A.; and Goding, David J., 4,281,741, Cl. 181-250.000.
Eesley, Gary L.; DeMaggio, Gregory B.; and Buchholz, Jeffrey C., 4,281,533, Cl. 73-15.00R.
Mann, Gamdur S., 4,281,451, Cl. 29-611.000.

General Signal Corporation: *See—*
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Genoux, Gerard C. L.: *See—*
Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., 4,281,967, Cl. 416-145.000.

George, Stephen; and George, Thomas H., to Textured Products, Inc. Laminated fiberglass fabric. 4,282,283, Cl. 428-228.000.

George, Stephen, to Textured Products, Inc. Flame and heat resistant electrical insulating tape. 4,282,284, Cl. 428-251.000.

George, Thomas H.: *See—*
George, Stephen; and George, Thomas H., 4,282,283, Cl. 428-228.000.

Geosource Inc.: *See—*
Brazell, Charles R.; and Villanueva, Joseph A., 4,281,765, Cl. 209-576.000.

Gerlitz, Gordon R. Three way butterfly valve. 4,281,686, Cl. 137-887.000.

Gesipa Blindniettechnik GmbH: *See—*
Ehmann, Hans; Bieber, Walter; and Baier, Hans, 4,281,531, Cl. 72-391.000.

Gevaert, Omer: *See—*
Gevaert, Stephan, 4,281,593, Cl. 99-349.000.

Gevaert, Stephan, to Gevaert, Omer. Device for preparing food products from cooked and expanded cereals and products obtained. 4,281,593, Cl. 99-349.000.

Geyer, Harry M.: *See—*
Bartmann, Wilhelm; Konz, Elmar; and Geyer, Harry M., 4,282,222, Cl. 424-250.000.
Bartmann, Wilhelm; Konz, Elmar; Kruse, Hansjorg; and Geyer, Harry M., 4,282,223, Cl. 424-250.000.

Gezari, Walter A., to C. R. Bard, Inc. Thermodilution injection system including an injectate cooling system. 4,281,665, Cl. 128-713.000.

Gharadjedaghi, Fereydoun, to Ebauches S.A. Electro-optic passive display cell. 4,281,903, Cl. 350-349.000.

Gibson, James A.: *See—*
Jenkins, David L.; and Gibson, James A., 4,281,471, Cl. 43-131.000.

Giese, Erik O.; Rinehart, Dixie L.; and Gross, Alexander L., to Comfort Products, Inc. Ski boot having a corrugated front portion. 4,281,468, Cl. 36-121.000.

Giese, Ralf: *See—*
Grittner, Heinz; and Giese, Ralf, 4,281,871, Cl. 296-65.00R.

Giese, Roger W. Biochemical avidin-biotin multiple-layer system. 4,282,287, Cl. 428-407.000.

Gillette Company, The: *See—*
Douglass, Paul W.; and Trotta, Robert A., 4,281,456, Cl. 30-89.000.
Trotta, Robert A., 4,281,454, Cl. 30-47.000.

Giovannoli, Joseph; and Charash, Leon. Electronic distance measurement and displaying apparatus. 4,282,571, Cl. 364-562.000.

Gist-Brocades N.V.: *See—*
Verwey, Jan; and Tan, Hong S., 4,282,145, Cl. 260-239.00A.

Givens, Wyatt W., to Mobil Oil Corporation. Neutron accelerator tube having improved ionization section. 4,282,440, Cl. 250-499.000.

Glasmacher, Peter: *See—*
Meisner, Alfred; Grasser, Hans; and Glasmacher, Peter, 4,282,513, Cl. 340-149.00R.

Glen, Alasdair T.; and Bayles, Richard W., to Imperial Chemical Industries Limited. Amides. 4,282,218, Cl. 424-240.000.

Global Marine, Inc.: *See—*
McNary, James F.; and Person, Abraham, 4,281,614, Cl. 114-264.000.

Glover, Douglas L.; Rubenstein, Roger H.; Douglas, Peter H.; and Bridges, Lee R., to Idea Syndicate, Inc., The. Articulated dental hand piece. 4,281,989, Cl. 433-130.000.

Goding, David J.: *See—*
Blaser, Dwight A.; and Goding, David J., 4,281,741, Cl. 181-250.000.

Goelz, David W.: *See—*
Hetherington, Robert D.; and Goelz, David W., 4,281,683, Cl. 137-606.000.

Goetz, Norbert; Steimmig, Anna; Zeeh, Bernd; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Insecticidal process. 4,282,238, Cl. 424-273.00R.

Goins, Robert R., to Phillips Petroleum Co. Proportional feeder for particulate solids. 4,281,776, Cl. 222-132.000.

Golden, Jeffry: *See—*
Kapetanakos, Christos A.; Pasour, John A.; Mahaffey, Redge A.; Golden, Jeffry; and Marsh, Spencer J., 4,282,436, Cl. 250-423.00R.

Goldstein, David; and Hoover, Scott, to United States of America, Navy. Melting method for high-homogeneity precise-composition nickel-titanium alloys. 4,282,033, Cl. 75-170.000.

Goloff, Alexander: *See—*
Belke, William H.; Goloff, Alexander; and Grim, George B., 4,282,009, Cl. 48-61.000.

Goodman, Richard M.; and Panzer, Hans P., to American Cyanamid Company. Selective flocculation for iron values. 4,282,087, Cl. 209-5.000.

Goodnight, Hershel E.; and Jaeger, Kurt S., to John Zink Company. Premix burner system for low BTU gas fuel. 4,281,983, Cl. 431-161.000.

Goodrich, Phillip W., to Henkel Corporation. Resilient starch graft polymer polyhydric alcohol product. 4,282,121, Cl. 260-17.4GC.

Goodyear Aerospace Corporation: *See—*
Raffel, Bernard D.; and Bowyer, John M., 4,282,508, Cl. 340-52.00R.

Goodyear Tire & Rubber Company, The: *See—*
Dobson, Robert L., 4,282,052, Cl. 156-79.000.

Gordon, Donald: *See—*
Johnson, Frank; Gordon, Donald; and Schick, George, 4,281,843, Cl. 280-47.260.

Gorman, Thomas E. Cutting guide for a router or similar tool. 4,281,694, Cl. 144-134.00D.

Goutard, Rene; and Levardon, Raymond, to Commissariat a l'Energie Atomique. Device for transferring and packaging contaminants such as radioactive products within a leak-tight sheath. 4,281,691, Cl. 141-1.000.

Graphic Controls Corp.: *See—*
Arrance, Frank C., Sr., 4,282,081, Cl. 204-195.00F.

Graphic Resources, Incorporated: *See—*
Hattemer, James C., 4,281,762, Cl. 206-390.000.

Grasser, Hans: *See—*
Meisner, Alfred; Grasser, Hans; and Glasmacher, Peter, 4,282,513, Cl. 340-149.00R.

Greber, Gerald: *See—*
Franzen, Roger W.; Greber, Gerald; and Rieken, William C., 4,282,254, Cl. 426-2.000.

Green, George E., to Ciba-Geigy Corporation. Process for the preparation of unsaturated ketones containing glycidyl groups. 4,282,353, Cl. 542-438.000.

Greene, James T., to AMF Incorporated. Beverage filtration process. 4,282,261, Cl. 426-330.400.

Grieger-Block, Richard A.: *See—*
Davidson, Robert S.; and Grieger-Block, Richard A., 4,282,159, Cl. 260-348.210.

Griffith, Ronald C.: *See—*
Davidson, Thomas A.; and Griffith, Ronald C., 4,282,146, Cl. 260-239.0BB.

Grigat, Ernst: *See—*
Niederdellmann, Georg; Roemer, Norbert; and Grigat, Ernst, 4,282,367, Cl. 260-2.300.

Grim, George B.: *See—*
Belke, William H.; Goloff, Alexander; and Grim, George B., 4,282,009, Cl. 48-61.000.

Grittner, Heinz; and Giese, Ralf, to Ford Motor Company. Motor vehicle seat mounted with longitudinal sliding mobility. 4,281,871, Cl. 296-65.00R.

Groll, Manfred; and Muller, Friedhelm, to Bayer Aktiengesellschaft. Dyestuff solutions, their preparation and their use for dyeing paper. 4,282,000, Cl. 8-527.000.

Grosch, Karl A.; Moitzheim, Paul H.; Schloesser, Gert; and Hensgens, Daniel J. M., to Uniroyal Engelbert Reifen GmbH. Pneumatic tire. 4,281,702, Cl. 152-209.00R.

Groskopfs, Ernest, to Spar Aerospace Limited. Three axes controller. 4,281,561, Cl. 74-471.0XY.

Gross, Alexander L.: *See—*
Giese, Erik O.; Rinehart, Dixie L.; and Gross, Alexander L., 4,281,468, Cl. 36-121.000.

Gross, Benjamin; and Lee, Wooyoung, to Mobil Oil Corporation. Catalytic cracking process. 4,282,084, Cl. 208-113.000.

Grote Manufacturing Company, Inc., The: *See—*
Newman, Charles J., 4,282,566, Cl. 362-369.000.

Grove Valve and Regulator Company: *See—*
Ripert, Roger L., 4,281,680, Cl. 137-527.400.

Grube, William L., to MacLean-Fogg Company. Locking fastener with resilient and rigid flange segments. 4,281,699, Cl. 411-176.000.

Gruesbeck, William G., to Ex-Cell-O Corporation. Controller system for rotary actuator. 4,282,467, Cl. 318-561.000.

Grumman Aerospace Corporation: *See—*
Corbett, Marshall J.; and Salina, Salvatore C., 4,282,187, Cl. 422-190.000.

Grunau Company, Inc.: *See—*
Simons, John R.; and Fenske, John W., 4,282,413, Cl. 200-81.90M.

Gruter, Johann; and Marki, Heinz, to Luwa AG. Apparatus for thermal treatment of flowable materials. 4,282,058, Cl. 159-13.00R.

GTE Automatic Electric Labs Inc.: *See—*
Gauthier, John A.; and Shaver, David M., 4,282,410, Cl. 179-84.00R.
Kippenhan, Herbert A., Jr.; Nelson, Eugene E.; and Ricker, George T., Jr., 4,282,399, Cl. 178-4.000.
Norman, Stanley R. C.; and Tin, Kam B., 4,282,488, Cl. 328-112.000.

GTE Laboratories Incorporated: *See—*
Barry, Vincent J.; and McCarthy, Jeremiah P., 4,281,448, Cl. 29-577.00C.

GTE Products Corporation: *See—*
Audesse, Emery G.; Brower, Boyd G.; Pfefferle, Donald H.; and Holmes, James L., 4,282,559, Cl. 362-15.000.
Latassa, Frank M.; Bienvenue, Roland L.; Poirier, Charles H.; and Wallace, John, 4,282,455, Cl. 313-177.000.
Mengeu, Gary L., 4,281,773, Cl. 220-3.200.
Shaffer, John W.; Colville, William T.; and Mecone, David W., 4,282,558, Cl. 362-15.000.

Guery, Dominique: *See—*
Demarthe, Jean-Michel; Fossi, Paolo; and Guery, Dominique, 4,282,188, Cl. 423-10.000.

Guest, Angela W.; Taylor, Andrew W.; and Ramage, Robert, to Beecham Group Limited. Process for preparation of thiophenes. 4,282,373, Cl. 560-181.000.

Guha, Jayanta K., to Perkin-Elmer Corporation, The. Very low absorption, low efficiency laser beamsampler. 4,281,894, Cl. 350-162.00R.

Guiliano, Basil A.; Pfeffer, Henry A.; and Kurtz, Andrew D., to FMC Corporation. Purification of cyanuric acid. 4,282,359, Cl. 544-192.000.

Guillemette, Armand; and Francois, Abel. Novel purification process. 4,282,161, Cl. 260-397.100.

Gulf Canada Resources Inc.: *See—*
Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.

Gulf Oil Corporation: *See—*
Rutter, Jerry L.; and Ahle, James L., 4,282,031, Cl. 71-99.000.

Gulf Research & Development Company: *See—*
Cupples, Barrett L.; and Heilman, William J., 4,282,392, Cl. 585-10.000.
Wu, Ching-Yong; Swift, Harold E.; and Bozik, John E., 4,282,384, Cl. 568-574.000.

Gundersen, Allan A.: *See—*
Ferri, Joseph E.; Gundersen, Allan A.; and Seelig, Oliver N., 4,281,937, Cl. 366-303.000.

Gunther, Donald A., to American Sterilizer Company. Disinfection with isopropanol vapor. 4,282,179, Cl. 422-27.000.

Gustincic, Jacob J., deceased (by Gustincic, Ruthann, administratrix); and Frosch, Robert A. Microwave limb sounder. 4,282,525, Cl. 343-100.0ME.

Gustincic, Ruthann, administratrix: *See—*
Gustincic, Jacob J., deceased; and Frosch, Robert A., 4,282,525, Cl. 343-100.0ME.

Gutierrez, Eddie N., to Lever Brothers Company. Method for the production of novel anhydride polycarboxylates. 4,282,156, Cl. 260-343.600.

Hacker, Barbara A.: *See—*
Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A., 4,282,194, Cl. 423-223.000.

Hacker, Jay P.: *See—*
Miller, James; Eifrid, Walter E.; and Hacker, Jay P., 4,281,733, Cl. 180-69.00C.

Hackett, Charles F.: *See—*
Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 4,282,298, Cl. 430-58.000.

Hadar, Arieh. Dual compartment electric water heater. 4,282,421, Cl. 219-314.000.

Hadlock, Fred, to FRAC, Inc. Heat exchanger. 4,281,710, Cl. 165-142.000.

Haga, Teturo; and Ikeguchi, Takashi, to Hitachi, Ltd. Apparatus for detecting coagulation effect. 4,282,093, Cl. 210-90.000.

Hagemann, Josef, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. High melting point glass-to-metal seal and melt connection, particularly for tungsten supply wires for high-pressure discharge lamps. 4,282,395, Cl. 174-50.610.

Haglund, Stephen A.; and Payne, Robert L., to Honeywell Inc. Interconnection of alarms of smoke detectors with distinguishable alarms. 4,282,519, Cl. 340-628.000.

Hake, Kenneth A.; and Palen, Nelson J., to Kent Manufacturing Co., Inc. Spring loaded field cultivator tool support. 4,281,719, Cl. 172-710.000.

Hall, Alan N.: *See—*
Phillips, Glyn O.; Hall, Alan N.; and Hogg, Stephen D., 4,282,204, Cl. 424-49.000.

Hall, John F., to Chrysler Corporation. Exhaust tube clamp. 4,281,863, Cl. 285-382.200.

Hall, Johnce E., to Standard Oil Company (Indiana). Flexible workover riser system. 4,281,716, Cl. 166-339.000.

Hall, Kenneth A. Anti-jackknife mechanism. 4,281,846, Cl. 280-432.000.

Haller, Klaus: *See—*
Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, 4,282,186, Cl. 422-180.000.

Halley, James L.: *See—*
Pacini, August J.; and Halley, James L., 4,282,104, Cl. 210-754.000.

Halliburton Company: *See—*
Farley, David L., 4,281,715, Cl. 166-317.000.
Harris, Allen E., 4,281,840, Cl. 277-117.000.

Haltmar, Warren C.: *See—*
Whittington, Lawrence E.; and Haltmar, Warren C., 4,281,714, Cl. 166-274.000.

Ham, John K.: *See—*
Khan, Sultan W.; Ham, John K.; and Strissel, Richard A., 4,282,583, Cl. 364-900.000.

Hamilton, Lewis R.: *See—*
Brust, David P.; Hamilton, Lewis R.; and Wilkes, Glenn R., 4,282,305, Cl. 430-213.000.

Hammel, Joseph J.; and Mackenzie, John D., to PPG Industries, Inc. Glass melting enhancement by toroidal batch shaping. 4,282,023, Cl. 65-134.000.

Hammett, Dillard S.: *See—*
Wilson, John H.; and Hammett, Dillard S., 4,281,615, Cl. 114-265.000.

Hanisco, Raymond L.: *See—*
O'Connell, Lawrence E.; and Hanisco, Raymond L., 4,281,815, Cl. 248-479.000.

Hanka, Ladislav J.; and Wiley, Paul F., to Upjohn Company, The. Biologically pure culture of *Paecilomyces abruptus*. 4,282,327, Cl. 435-254.000.

Hannah, John, to Merck & Co., Inc. 7-N-Heterocyclyl cephalosporins and antibiotic pharmaceutical compositions containing them. 4,282,219, Cl. 424-246.000.

Hansel, William B., to Sun Oil Company of Pennsylvania. Sensor for measuring leakage. 4,281,534, Cl. 73-49.200.

Hanson, James M.; and Bradley, Irving, to General Electric Company. Sealed, prefocused mount for plastic PAR lamp. 4,282,565, Cl. 362-267.000.

Hardwick, Steven F.; and Fernicola, Robert C., to Union Carbide Corporation. Constant current welding power supply with an upslope starting current. 4,282,569, Cl. 363-87.000.

Harper, Robert, to Raytheon Company. Backward wave suppressor. 4,282,457, Cl. 315-3.600.

Harris, Allen E., to Halliburton Company. High temperature packer element for well bores. 4,281,840, Cl. 277-117.000.

Harris Corporation: *See—*
Dressler, Friedrich K., 4,281,597, Cl. 101-365.000.
Patterson, Raymond B., III, 4,282,515, Cl. 340-347.0CC.
Ports, Kenneth A.; and St. Clair, Thomas R., 4,281,449, Cl. 29-593.000.

Harris Data Communications Inc.: *See—*
DeRienzo, William T., 4,282,489, Cl. 328-206.000.

Harris, David P. Kitchen utensil. 4,281,460, Cl. 30-278.000.

Harris, Samuel W.: *See—*
Schaap, Luke A.; Udelhofen, John H.; and Harris, Samuel W., 4,282,106, Cl. 252-32.70E.

Harris, Thomas L.: *See—*
Eymann, Steven W.; Fried, Mark A.; and Harris, Thomas L., 4,282,524, Cl. 343-14.000.

Harrison, Gregory K.: *See—*
Runkle, Dean E.; Tang, Louis S.; and Harrison, Gregory K., 4,281,585, Cl. 91-5.000.

Harvey, William A.; and Torok, Ernest J., to Sperry Corporation. Magneto-optic light deflector beam recombination apparatus. 4,281,905, Cl. 350-377.000.

Hasegawa, Seiro: *See—*
Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, 4,282,480, Cl. 324-61.00R.

Hashimoto, Akihiko, to Olympus Optical Co., Ltd. Water tight seal structure for camera. 4,281,837, Cl. 277-12.000.

Hashimoto, Teiji: *See—*
Tezuka, Nobuo; Hashimoto, Teiji; Senuma, Mitio; and Iwata, Yutaka, 4,281,914, Cl. 354-244.000.

Haslehner, Hermann: *See—*
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,281,823, Cl. 266-246.000.

Hassler, Dieter; and Schwarz, Robert, to Siemens Aktiengesellschaft. Method and circuit arrangement for energizing ultrasonic transducers which are utilized in impulse echo technology. 4,282,452, Cl. 310-317.000.

Hasuno, Sadao: *See—*
Yamagata, Mitsukuni; Takitani, Keiichiro; Hasuno, Sadao; and Motoda, Kuniaki, 4,282,047, Cl. 148-143.000.

Hattemer, James C., to Graphic Resources, Incorporated. In-store coupon and methods. 4,281,762, Cl. 206-390.000.

Hatten, Hideaki; Onji, Norio; Tsujino, Koichi; and Fukuyama, Toshifumi, to Omron Tateisi Electronics Co. Reflection-type photoelectric switching apparatus. 4,282,430, Cl. 250-221.000.

Hauni-Werke Korber & Co. KG: *See—*
Heitmann, Uwe; Buchegger, Joachim; and Hinz, Werner, 4,281,670, Cl. 131-281.000.

Hayakawa, Kimiaki: *See—*
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuichi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.

Hayashi, Kiyozumi; and Domoto, Kazushige, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Nuclear fuel element. 4,282,064, Cl. 176-73.000.

Hayashi, Shukichi: *See—*
Yoshida, Matuju; and Hayashi, Shukichi, 4,282,574, Cl. 364-431.000.

Hayes, Ernest B.: *See—*
Bynre, Stanley W.; Tompkins, Barry J.; and Hayes, Ernest B., 4,281,671, Cl. 131-335.000.

Hays, James R., Sr.: *See—*
Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A., 4,282,194, Cl. 423-223.000.

Hebert, Gayle P.: *See—*
Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., 4,282,107, Cl. 252-42.700.

Hebold, Gottfried: *See—*
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Hebold, Gottfried, 4,282,212, Cl. 424-200.000.

Hecht, Sidney M.; and Jordis, Ulrich, to Massachusetts Institute of Technology. Synthesis for 7-alkylamino-3-methylpyrazolo [4,3-d]pyrimidines. 4,282,361, Cl. 544-262.000.

Heikinheimo, Olli, to Plan-Shell Oy. Method and system of aligning lumber, especially blocks from which the first pair of cants has been removed. 4,281,695, Cl. 144-312.000.

Heikkinen, Leo L.; and Lundborg, Charles L., to LaFont Corporation. Firewood systems. 4,281,697, Cl. 144-326.00R.

Heilman, William J.: *See—*
Cupples, Barrett L.; and Heilman, William J., 4,282,392, Cl. 585-10.000.

Heinis, Robert P.: *See—*
Schotter, Richard D.; and Heinis, Robert P., 4,281,936, Cl. 366-209.000.

Heinrich, William P.: *See—*
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Heitmann, Uwe; Buchegger, Joachim; and Hinz, Werner, to Hauni-Werke Korber & Co. KG. Apparatus for increasing the permeability of wrapping material for rod-shaped smokers products. 4,281,670, Cl. 131-281.000.

Heliotropin Engineering Corp.: *See—*
Devore, Clyde W., 4,281,641, Cl. 126-438.000.

Hellnick, Dieter H., to Jo-Way Tool Company, Inc. Method and apparatus for machining pipe collars. 4,281,430, Cl. 10-101.00R.

Helms, Horst, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Doppler log. 4,282,586, Cl. 367-13.000.

Henkel Corporation: *See—*
Goodrich, Phillip W., 4,282,121, Cl. 260-17.4GC.

Hensey, Warren R., to Ex-Cell-O Corporation. Container and blank for constructing same. 4,281,787, Cl. 229-17.00G.

Hensgens, Daniel J. M.: *See—*
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Hensolt, Theodor; and Rau, Peter, to Kraftwerk Union Aktiengesellschaft. Fuel assembly for gas-cooled nuclear reactors. 4,282,065, Cl. 176-78.000.

Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity: *See—*
Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.

Herbold, Daniel J. Calliper system for laying out stirrups used in lower extremity orthosis. 4,281,462, Cl. 33-191.000.

Hercules Incorporated: *See—*
Boynton, Donald E., 4,282,076, Cl. 204-159.200.
Maslanka, William W.; and Spence, Gavin G., 4,282,060, Cl. 162-162.000.

Herscovici, Saul, to Power Engineering and Manufacturing, Ltd. Speed reducer gear box with flywheel. 4,281,560, Cl. 74-414.000.

Herzog, William F.: *See—*
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Hesse, Wolfgang: *See—*
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Hession, Brent M.: *See—*
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Hession Industries, Inc.: *See—*
Hession, Rodney J.; and Hession, Brent M., 4,281,464, Cl. 33-408.000.

Hession, Rodney J.; and Hession, Brent M., to Hession Industries, Inc. Device to facilitate the laying of masonry units. 4,281,464, Cl. 33-408.000.

Hetherington, Robert D.; and Goelz, David W., to Poly-Glas Systems. Modular multiple-fluid component selection and delivery system. 4,281,683, Cl. 137-606.000.

Heuner, Robert C., to RCA Corporation. Starting circuit for low power oscillator circuit. 4,282,496, Cl. 331-116.0FE.

Hewlett-Packard Company: *See—*
Fischer, Michael C., 4,282,482, Cl. 324-83.00A.

Higashiguchi, Shigehiko. Transferable flocked fiber sticker material. 4,282,278, Cl. 428-90.000.

Hildebrant, R. Laing: *See—*
Dickason, Allen D.; and Hildebrant, R. Laing, 4,281,728, Cl. 177-134.000.

Hill, Dennis R. Finger toy. 4,281,472, Cl. 46-53.000.

Hill, Gwendolyn K.: *See—*
Hill, John W., deceased, 4,281,564, Cl. 74-665.00D.

Hill, Gwendolyn K., administrator: *See—*
Hill, John W., deceased, 4,281,564, Cl. 74-665.00D.

Hill, Jay L. Rotary blade power saw attachment. 4,281,570, Cl. 83-477.200.

Hill, John W., deceased (by Hill, Gwendolyn K., administrator), to Hill, Gwendolyn K. Power train or transmission. 4,281,564, Cl. 74-665.00D.

Hine, Jean P. M.: *See—*
Watine, Didier J. M. M.; Hine, Jean P. M.; Catabelle, Jean M. H.; and Delamotte, Jean C. C., 4,282,396, Cl. 174-84.00R.

Hinshaw, Stanley E.; and Cole, Charles F., Jr., to Conoco, Inc. (formerly Continental Oil Company). Electronic mine roof bolt tester. 4,281,547, Cl. 73-579.000.

Hinz, Werner: *See—*
Heitmann, Uwe; Buchegger, Joachim; and Hinz, Werner, 4,281,670, Cl. 131-281.000.

Hirada Stechnikai Ipari Kutato Intezet: *See—*
Kertesz, Gabor; and Vago, Gyorgy, 4,282,083, Cl. 204-298.000.

Hirasawa, Kotaro: *See—*
Imai, Masumi; Hirasawa, Kotaro; Suda, Seijo; and Kawamoto, Yukio, 4,282,573, Cl. 364-431.000.

Hirose, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic cash dispensing machine. 4,282,424, Cl. 235-379.000.

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Hirt, Theodore A.; and Dillon, Robert H., to Thomas Steel Strip Corporation. Electro-co-deposition of corrosion resistant nickel/zinc alloys onto steel substrates. 4,282,073, Cl. 204-28.000.

Hitachi, Ltd.: *See—*
Fujita, Kazunori; Uno, Shigeo; Takeuchi, Seizi; and Yamashita, Hisao, 4,282,092, Cl. 210-682.000.
Haga, Teturo; and Ikeguchi, Takashi, 4,282,093, Cl. 210-90.000.
Imai, Masumi; Hirasawa, Kotaro; Suda, Seijo; and Kawamoto, Yukio, 4,282,573, Cl. 364-431.000.
Kanazawa, Yasunori; Arai, Takao; Yokozawa, Norio; and Takasugi, Wasao, 4,282,551, Cl. 360-32.000.
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Ho, Bin L.; and Bibby, Stephen, to Priam. Enclosed disc drive with improved air flow. 4,282,554, Cl. 360-97.000.

Hoagland, John C.; Farmer, Peter H.; and Carabetta, Rocco M., Jr., to Monsanto Company. Expansion deformable extrusion die blade. 4,281,980, Cl. 425-461.000.

Hoch, John J., to Deere & Company. Two-stage deadman control for walk-behind mower. 4,281,732, Cl. 180-19.00H.

Hochberg, Howard M.: *See—*
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Hoechst Aktiengesellschaft: *See—*
Bartmann, Wilhelm; Konz, Elmar; and Geyer, Harry M., 4,282,222, Cl. 424-250.000.
Bartmann, Wilhelm; Konz, Elmar; Kruse, Hansjorg; and Geyer, Harry M., 4,282,223, Cl. 424-250.000.
Bormann, Dieter; Durckheimer, Walter; and Schrinner, Elmar, 4,282,220, Cl. 424-246.000.
Erckel, Rudiger; and Jurges, Peter, 4,282,355, Cl. 542-459.000.
Kuhls, Jurgen, 4,282,162, Cl. 260-408.000.
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,282,318, Cl. 435-68.000.
Rosenbusch, Kurt; and Schlingmann, Merten, 4,281,997, Cl. 8-94.10P.
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Regitz, Gunter, 4,282,239, Cl. 424-274.000.

Hoehn, Hans, to E. R. Squibb & Sons, Inc. Imidazolylethoxy derivatives of quinoline-2- or 4-methanols, antimicrobial compositions

containing them and method for treating bacterial or fungal infections with them. 4,282,230, Cl. 424-258.000.
Hoekje, Howard H., to PPG Industries, Inc. Submicron titanium boride powder and method for preparing same. 4,282,195, Cl. 423-289.000.
Hoernschemeyer, August B.; Zinser, Alan L.; and Myers, John F., to St. Louis Conveyor Company Inc. Rotary sifting device. 4,282,090, Cl. 209-291.000.
Hoffman, David A., to Bendix Corporation, The. Supply valve for dual circuit systems. 4,281,677, Cl. 137-113.000.
Hoffman, Paul H.; and Lessig, John A. Shrimp processing machine. 4,281,436, Cl. 17-72.000.
Hoffmann-La Roche Inc.: *See—*
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Hoffmann, Peter: *See—*
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Holdegraver, Robert E.: *See—*
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Holland, Gerald F., to Pfizer Inc. Antidiabetic pyrrolecarboxylic acids. 4,282,242, Cl. 424-274.000.
Holland, Gerald F., to Pfizer Inc. Antidiabetic furancarboxylic and thiphenecarboxylic acids. 4,282,246, Cl. 424-275.000.
Holland, Judith J., to Tarn Textiles Limited. Furniture unit. 4,281,873, Cl. 297-118.000.
Holmes, James L.: *See—*
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Holtsman, William L.: *See—*
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Honeywell Inc.: *See—*
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Lee, Tzuo-Chang; and Skogen, John D., 4,282,294, Cl. 430-1.000.
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Honig, Helmut: *See—*
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Honjo Chemical Corporation, The: *See—*
Muramoto, Makoto; Ishida, Nobuyuki; and Matsushita, Fujio, 4,282,117, Cl. 252-508.000.
Hoover, Scott: *See—*
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Hori, Masayosi: *See—*
Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayosi; and Yoshida, Tetsuro, 4,282,200, Cl. 423-598.000.
Horn, Hannes S.: *See—*
Buchner, Heinrich; and Horn, Hannes S., 4,281,963, Cl. 415-178.000.
Horowitz, Alexandre; van der Hoorn, Rudolf J. G. A.; and Kummeling, Jozef W. M., to Volvo Car B.V. Method of curving supporting surfaces of driving belt elements. 4,281,483, Cl. 51-328.000.
Horwath, Gary W. Miter boxes. 4,281,827, Cl. 269-189.000.
Hoskinson, William R.; and Machanian, William V., to Wurlitzer Company, The. Control system for vending machine. 4,282,575, Cl. 364-479.000.
Hosoya, Katsuyuki: *See—*
Ohta, Shigenori; and Hosoya, Katsuyuki, 4,282,563, Cl. 362-216.000.
Houjyo, Susumu: *See—*
Kato, Tutomu; and Houjyo, Susumu, 4,281,623, Cl. 118-668.000.
Houston, Robert K.; and Meador, James, to FMC Corporation. Apparatus for sorting fruit according to color. 4,281,933, Cl. 356-425.000.
Howard, Vincent M.; Maxey, Carl W.; and Dellett, John P., to Jones, Aaron U. Automatic sawmill method and apparatus. 4,281,696, Cl. 144-312.000.
Howe-Baker Engineers, Inc.: *See—*
McKnight, William J., 4,282,172, Cl. 261-76.000.
Hsieh, Shuang-Shii; and Brooks, Dennis G., to Tennessee Valley Authority. Phosphate flotation with tribasic acids. 4,282,089, Cl. 209-166.000.
Hu, Sung C.: *See—*
Brown, Ronald A.; Hu, Sung C.; and Struger, Odo J., 4,282,584, Cl. 364-900.000.
Hulbert, Anthony P., to Plessey Handel und Investments AG. Frequency modulator having linearized operation. 4,282,497, Cl. 332-19.000.
Hulse, David O.: *See—*
Mekosh, George, Jr.; and Hulse, David O., 4,281,881, Cl. 303-99.000.
Hummel, Darsten: *See—*
Bruhmann, Werner; Schwartz, Reinhard; and Hummel, Darsten, 4,281,630, Cl. 123-373.000.
Humphries, Darral V.: *See—*
Austen, Alfred R.; and Humphries, Darral V., 4,282,277, Cl. 428-36.000.
Hunt, Earl R.; Rosler, Robert K.; and Peterson, James O. Flame retardant epoxy molding compound method and encapsulated device. 4,282,136, Cl. 260-38.000.
Hunter, Gerald D.; and Palombo, Gaston A., to Honeywell Inc. Chromosome detector using a scanning microscope system. 4,282,428, Cl. 250-214.00R.
Hutchings, Thomas J., to Litton Systems, Inc. Laser gyro with phased dithered mirrors. 4,281,930, Cl. 356-350.000.
Hutchins, Burleigh M.; and Abrahams, Louis, to Waters Associates, Inc. Fluid storage device. 4,281,687, Cl. 138-28.000.
Hwang, Mei H., to Calgon Corporation. Electroconductive polymer composition. 4,282,118, Cl. 252-518.000.
Hydro-Quebec: *See—*
Chamberland, Andre M.; and Gauthier, Michel, 4,282,078, Cl. 204-195.00S.
Hyper-Loop, Inc.: *See—*
Barker, Thomas; Russel, Andrew L., Jr.; Bricault, Gary; and Van Wieren, Albert L., 4,282,468, Cl. 318-608.000.
Ichikawa, Singo, to Citizen Watch Company Limited. Electronic timepiece. 4,282,594, Cl. 368-82.000.
ICI Americas Inc.: *See—*
Kuehn, Erich, 4,282,138, Cl. 260-40.00R.
ICI Australia Limited: *See—*
McGarry, Errol J.; and Forsyth, Bruce A., 4,282,390, Cl. 568-720.000.
Idea Syndicate, Inc., The: *See—*
Glover, Douglas L.; Rubenstein, Roger H.; Douglas, Peter H.; and Bridges, Lee R., 4,281,989, Cl. 433-130.000.
Ienaka, Masanori: *See—*
Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,282,448, Cl. 307-273.000.
Ignell, Rolf L., to Tetra Pak Developpement SA. Packing container. 4,281,769, Cl. 215-12.00R.
Ihara, Masaru; and Jifuku, Masayuki, to Fujitsu Limited. Semiconductor substrate and method for the preparation of the same. 4,282,543, Cl. 357-54.000.
Iida, Noriyuki: *See—*
Ochiai, Akio; Iida, Noriyuki; and Yoshimura, Yasumasa, 4,281,898, Cl. 350-281.000.
Iizawa, Nobutsugu, to Matsushima Kogyo Kabushiki Kaisha. Circuit package. 4,282,498, Cl. 333-186.000.
Ikeda, Takeshi: *See—*
Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.
Ikeda, Tomoaki: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.
Ikeguchi, Takashi: *See—*
Haga, Teturo; and Ikeguchi, Takashi, 4,282,093, Cl. 210-90.000.
Ilaria, Joseph E., to Mobil Oil Corporation. Elastomeric urethane coating. 4,282,123, Cl. 260-18.0PT.
Illger, Hans-Walter: *See—*
von Bonin, Wulf; Vehlewald, Peter; and Illger, Hans-Walter, 4,282,329, Cl. 521-99.000.
Imahori, Kazutomo; and Tomita, Kosuke, to Unitika Ltd. Adenosine triphosphate derivative. 4,282,352, Cl. 536-27.000.
Imai, Masumi; Hirasawa, Kotaro; Suda, Seijo; and Kawamoto, Yukio, to Hitachi, Ltd. Processor interrupt device for an electronic engine control apparatus. 4,282,573, Cl. 364-431.000.
Imamura, Kenji: *See—*
Makino, Motohiko; Imamura, Kenji; and Kurosawa, Yoshinori, 4,282,302, Cl. 430-107.000.
Immuno Aktiengesellschaft fur Chemisch-Medizinische Produkte: *See—*
Barta, Helmut; and Simonich, Walter, 4,281,653, Cl. 128-218.00D.
Imperial Chemical Industries Limited: *See—*
Glen, Alasdair T.; and Bayles, Richard W., 4,282,218, Cl. 424-240.000.
Inami, Sumio, to Nissan Motor Company Limited. Vehicle door structure. 4,281,478, Cl. 49-503.000.
Inbauproduct Innenausbausysteme GmbH & Co. KG: *See—*
Winter, Claus; and Ehrmann, Wolfgang, 4,281,435, Cl. 16-94.00R.
Industrie Koot B.V.: *See—*
Oskam, Aane A., 4,281,899, Cl. 350-289.000.
Ingram, Charles E., to Four Star Corporation. Detachable luggage carrier for automobiles. 4,281,783, Cl. 224-325.000.
Inoue, Tomohiro: *See—*
Tanimoto, Akira; and Inoue, Tomohiro, 4,281,578, Cl. 84-470.00R.
Inouye, Tamon: *See—*
Nishida, Susumu; Inouye, Tamon; Yoshida, Tadatoki; and Saito, Kiyoto, 4,282,438, Cl. 250-445.00T.
Insinger Machine Company: *See—*
Pure, Albert, 4,281,675, Cl. 134-125.000.
Institute of Gas Technology: *See—*
Kardas, Alan, 4,281,982, Cl. 431-1.000.
Instrumentation Laboratory Inc.: *See—*
Webster, Milo E., 4,282,182, Cl. 422-68.000.
International Business Machines Corporation: *See—*
Chang, Chin-An, 4,282,043, Cl. 148-1.500.
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., 4,282,540, Cl. 357-23.000.
International Flavors & Fragrances Inc.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert;

MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,282,205, Cl. 424-49.000.
International Foodservice Equipment Systems, Inc.: *See*—
Volz, Kenneth C., 4,282,423, Cl. 219-490.000.
International Harvester Company: *See*—
Miller, James; Eifrid, Walter E.; and Hacker, Jay P., 4,281,733, Cl. 180-69.00C.
Molzahn, Herbert W., 4,281,737, Cl. 180-307.000.
International Paper Company: *See*—
Eudy, William W., 4,282,366, Cl. 556-413.000.
International Telephone & Telegraph Corporation: *See*—
Mohiuddin, Gulam, 4,282,285, Cl. 428-315.000.
Sitabkhan, Mansur N., 4,281,892, Cl. 350-96.210.
Inventio AG: *See*—
Keiser, Emil, 4,281,739, Cl. 181-207.000.
IPM Corporation: *See*—
Pierce, Danny A., 4,282,181, Cl. 422-53.000.
Ipri, Alfred C., to RCA Corporation. Input protection device for insulated gate field effect transistor. 4,282,556, Cl. 361-56.000.
Irie, Shin-ichi; Uesugi, Kenji; and Kimura, Hitoshi, to Furukawa Electric Co., Ltd., The. Polyolefin series resin composition for water-tree retardant electric insulation. 4,282,333, Cl. 525-6.000.
Irwin, Michael R., to American Cyanamid Co. Method for the control of shipping fever pneumonia in cattle. 4,282,210, Cl. 424-89.000.
Ishibashi, Takao; and Osonoi, Kenjiro, to Osawa Precision Industries, Ltd. Modular camera system. 4,281,909, Cl. 352-25.000.
Ishida, Nobuyuki: *See*—
Muramoto, Makoto; Ishida, Nobuyuki; and Matsushita, Fujio, 4,282,117, Cl. 252-508.000.
Ishigami, Hikoichi: *See*—
Yato, Fumihiro; Kitayama, Seishi; Tamura, Junso; Ishigami, Hikoichi; and Kurematsu, Akira, 4,282,406, Cl. 179-1.0SC.
Isola Fabrikker A/S: *See*—
Thiis-Evensen, Harald, 4,282,050, Cl. 156-71.000.
Isolite Insulating Product Company Limited (Isolite Kogyo K.K.): *See*—
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.
Italfarmaco S.p.A.: *See*—
Baglioni, Alessandro; and Sportoletti, Giancarlo, 4,282,217, Cl. 424-240.000.
Ito, Akira; Sasaki, Heizo; Osawa, Masanori; Kouno, Masahiro; and Iwata, Kenji, to Mitsui Toatsu Chemicals, Inc. Catalyst for polymerizing α-olefins. 4,282,114, Cl. 252-429.00B.
Ito, Takashi: *See*—
Nozaki, Takao; and Ito, Takashi, 4,282,270, Cl. 427-93.000.
Ivanyatov, Jury E.: *See*—
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Kosholkin, Valery N., 4,281,452, Cl. 29-623.100.
Iwans, Robert C.; Brennan, Edward J.; and Weik, Kirby B., to Koehler-Dayton, Inc. Aircraft seat with cantilevered tray table. 4,281,874, Cl. 297-163.000.
Iwasa, Masakazu: *See*—
Kudo, Yoshio; Iwasa, Masakazu; and Kato, Hisashi, 4,281,622, Cl. 118-653.000.
Iwasaki, Yukio: *See*—
Shimizu, Michio; Iwasaki, Yukio; Wagatsuma, Tadashi; and Kasai, Osamu, 4,282,415, Cl. 200-336.000.
Iwata, Kenji: *See*—
Ito, Akira; Sasaki, Heizo; Osawa, Masanori; Kouno, Masahiro; and Iwata, Kenji, 4,282,114, Cl. 252-429.00B.
Iwata, Yutaka: *See*—
Tezuka, Nobuo; Hashimoto, Teiji; Senuma, Mitio; and Iwata, Yutaka, 4,281,914, Cl. 354-244.000.
Iyengar, Jagannathan N.: *See*—
Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A., 4,282,194, Cl. 423-223.000.
J. I. Case Company: *See*—
Newman, Richard A., 4,282,509, Cl. 340-69.000.
Youngers, Stephen A., 4,281,848, Cl. 280-494.000.
J. M. Huber Corporation: *See*—
Lamond, Trevor G.; and Aboytes, Peter, 4,282,199, Cl. 423-461.000.
Oder, Robin R., 4,281,799, Cl. 241-24.000.
J. R. Schneider Co., Inc.: *See*—
Crowe, William D., 4,282,105, Cl. 210-798.000.
Jackman, Thomas R.; and Stonebanks, Trevor J., to Shendale Ltd. Steerable castored vehicle. 4,281,844, Cl. 280-87.010.
Jackson, Liam R.; and Taylor, Allan H. High-strength blind rivet. 4,281,581, Cl. 411-19.000.
Jackson, Michael. Spherical loudspeaker enclosure. 4,281,738, Cl. 181-151.000.
Jacobs, Annella E. Neonatal flotation pad. 4,281,425, Cl. 5-455.000.
Jacobs, John J., to Carrier Corporation. Apparatus for controlling the performance of a motor compressor. 4,281,972, Cl. 417-415.000.
Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; Mahieu, Claude; and Zorayan, Vahan, to L'Oreal. Hair lacquer and hair lotion compositions containing a copolymer having units of a vinyl allyl or methally ester of an α- or β-cyclic carboxylic acid. 4,282,203, Cl. 424-47.000.
Jadlocki, Joseph F., Jr.; and Thompson, John S., to FMC Corporation. Method for inhibiting the growth of *Clostridium botulinum* and the formation of enterotoxin in smoked meat products. 4,282,260, Cl. 426-264.000.
Jaeger, Kurt S.: *See*—
Goodnight, Hershel E.; and Jaeger, Kurt S., 4,281,983, Cl. 431-161.000.
Jaqua, Vance W., to United States of America, Air Force. Control piston for liquid propellant gun injector. 4,281,582, Cl. 89-7.000.
Jaske, Robert F., to Sprague Devices, Inc. Reciprocating piston fluid powered motor. 4,281,588, Cl. 91-290.000.
Jefferson, William T. Optical isolation circuit for bidirectional communication lines. 4,282,604, Cl. 455-602.000.
Jeney, Tibor, to NOVEX Talalmanyfejleszto es Ertekesito Kulker. Rt. Process for casting objects having complicated shapes. 4,281,705, Cl. 164-10.000.
Jenkins, David L.; and Gibson, James A., to Check Fumigation and Pest Control Limited. Rodent control devices. 4,281,471, Cl. 43-131.000.
Jensen, James D.; and Schoolar, Richard B., to United States of America, Navy. $Pb_{1-}WCd_{\mu}S$ Epitaxial thin film. 4,282,045, Cl. 148-33.300.
Jifuku, Masayuki: *See*—
Ihara, Masaru; and Jifuku, Masayuki, 4,282,543, Cl. 357-54.000.
Jinkins, Danny R., to Black & Decker Inc. Turbine housing and method for making the same. 4,281,964, Cl. 415-203.000.
Jo-Way Tool Company, Inc.: *See*—
Hellnick, Dieter H., 4,281,430, Cl. 10-101.00R.
Jobsis, Frans F., to Duke University, Inc. Method and apparatus for monitoring metabolism in body organs. 4,281,645, Cl. 128-633.000.
John Zink Company: *See*—
Goodnight, Hershel E.; and Jaeger, Kurt S., 4,281,983, Cl. 431-161.000.
Johnson, Alfred D.; and Kirkpatrick, Paul F. Field effect memory alloy heat engine. 4,281,513, Cl. 60-527.000.
Johnson, Frank; Gordon, Donald; and Schick, George, to Slater Steel Industries, Limited. Tool carrier. 4,281,843, Cl. 280-47.260.
Johnson & Johnson: *See*—
Rovee, D. Thomas; Marvel, John R.; and Mezick, James A., 4,282,216, Cl. 424-240.000.
Johnson, Matthey & Co., Limited: *See*—
Tindall, Richard F.; Baddeley, Eric R.; and Rudd, Peter W., 4,282,507, Cl. 338-25.000.
Johnson, Richard V.: *See*—
Sprague, Robert A.; and Johnson, Richard V., 4,281,904, Cl. 350-356.000.
Johnston, Gary D. Multi-function control system. 4,281,734, Cl. 180-167.000.
Johnston, Robert J.; Layciak, Stephen G.; and Cametti, George M., to Westinghouse Electric Corp. Convertible switch operator. 4,282,414, Cl. 200-160.000.
Jones, Aaron U.: *See*—
Howard, Vincent M.; Maxey, Carl W.; and Dellett, John P., 4,281,696, Cl. 144-312.000.
Jones, Frank O., Jr.: *See*—
Murphy, Robert P.; and Jones, Frank O., Jr., 4,281,712, Cl. 166-250.000.
Jones, James H.: *See*—
Baldwin, John J.; Jones, James H.; and Lundell, George F., 4,282,240, Cl. 424-274.000.
Jones, John L. Integral partitioned hemodialysis unit. 4,282,099, Cl. 210-247.000.
Jordis, Ulrich: *See*—
Hecht, Sidney M.; and Jordis, Ulrich, 4,282,361, Cl. 544-262.000.
Joseph, Horst G.: *See*—
Flockenhaus, Claus; Galow, Manfred; Meckel, Joachim F.; and Joseph, Horst G., 4,282,068, Cl. 202-227.000.
Jung, Johann: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,282,027, Cl. 71-76.000.
Jung, Rudolf: *See*—
Walter, Manfred; Stein, Dieter; Fahrbach, Gerhard; Jung, Rudolf; and Echte, Adolf, 4,282,334, Cl. 525-53.000.
Jurek, Dennis J., to Square D Company. Method for controlling magnetizing current in multipulse resistant welding. 4,282,417, Cl. 219-116.000.
Jurges, Peter: *See*—
Erckel, Rudiger; and Jurges, Peter, 4,282,355, Cl. 542-459.000.
Kabushiki Gaisha Mitokako: *See*—
Shigematsu, Shozo, 4,281,978, Cl. 425-376.00B.
Kabushiki Kaisha Daini Seikosha: *See*—
Kaneko, Noboru, 4,281,544, Cl. 73-362.0SC.
Kabushiki Kaisha Ricoh: *See*—
Ohta, Sakae; and Tani, Tatsuo, 4,281,557, Cl. 74-89.220.
Kabushiki Kaisha Suwa Seikosha: *See*—
Miyasaka, Mamoru, 4,282,592, Cl. 368-37.000.
Ushiyama, Yoshito, 4,281,901, Cl. 350-336.000.
Kabushiki Kaisha Tokyo Kikai Seisakusho: *See*—
Fujishiro, Yuji, 4,281,595, Cl. 101-177.000.
Kagabu, Hiroshi: *See*—
Uemura, Toshio; Kagabu, Hiroshi; Arisaki, Kenji; Kajimoto, Noboru; Akatsuka, Shinshi; and Fujimoto, Takuaki, 4,281,605, Cl. 110-245.000.
Kahan, Frederick M.: *See*—
Kahan, Jean S.; and Kahan, Frederick M., 4,282,322, Cl. 435-119.000.
Kahan, Jean S.; and Kahan, Frederick M., to Merck & Co., Inc. Process for enzymatic deacylation of antibiotics. 4,282,322, Cl. 435-119.000.
Kaiser, Robert A.: *See*—
Tucker, John D.; Cozad, Ronald E.; and Kaiser, Robert A., 4,281,722, Cl. 175-57.000.

Kajimoto, Noboru: *See*—
Uemura, Toshio; Kagabu, Hiroshi; Arisaki, Kenji; Kajimoto, Noboru; Akatsuka, Shinshi; and Fujimoto, Takuaki, 4,281,605, Cl. 110-245.000.

Kallestad, Daniel R.; and Barr, David F., to Continental Agri-Services, Inc. Floor support for grain drying and storage bin. 4,281,489, Cl. 52-192.000.

Kaltenbach & Voight GmbH & Co.: *See*—
Eibofner, Eugen, 4,281,988, Cl. 433-129.000.

Kamata, Shigeru, to Canon Kabushiki Kaisha. Arrangement for adjusting a member in a lens barrel for effecting a zooming function zoom lenses. 4,281,907, Cl. 350-427.000.

Kaminaga, Hiromitsu, to Yoshida Kogyo K.K. Roller-supported closure having a closure retainer. 4,281,477, Cl. 49-453.000.

Kampe, Wolfgang: *See*—
Berger, Herbert; Gall, Rudi; Kampe, Wolfgang; Bicker, Uwe; and Hebold, Gottfried, 4,282,212, Cl. 424-200.000.

Kanazawa, Yasunori; Arai, Takao; Yokozawa, Norio; and Takasugi, Wasao, to Hitachi, Ltd. PCM Recording and reproducing apparatus. 4,282,551, Cl. 360-32.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Fukuda, Hideki; Shiotani, Takeshi; and Okada, Wataru, 4,282,328, Cl. 435-255.000.
Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, 4,282,336, Cl. 525-102.000.

Kaneko, Isao: *See*—
Kawazoe, Masayuki; Tomoda, Yasuro; Sasaki, Atsuo; and Kaneko, Isao, 4,281,821, Cl. 266-44.000.

Kaneko, Masatoshi: *See*—
Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.

Kaneko, Noboru, to Kabushiki Kaisha Daini Seikosha. Temperature detecting device. 4,281,544, Cl. 73-362.0SC.

Kanics, Andras, to Buhler-Miag; and Metallgesellschaft Aktiengesellschaft. Pneumatic conveyance device and conveying method employing percolation of gas into flowable bulk material in a feed pipe. 4,281,946, Cl. 406-95.000.

Kao Soap Co., Ltd.: *See*—
Koike, Mamoru, 4,282,110, Cl. 252-107.000.

Kapetanakos, Christos A.; Pasour, John A.; Mahaffey, Redge A.; Golden, Jeffry; and Marsh, Spencer J., to United States of America, Navy. Intense ion beam generation with an inverse reflex tetrode (IRT). 4,282,436, Cl. 250-423.00R.

Kaplan, Jonathan I., to Polaroid Corporation. Electric wire terminal connecting structure. 4,281,886, Cl. 339-97.00R.

Karady, Sandor: *See*—
Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,282,364, Cl. 548-202.000.

Karasinski, Frederick: *See*—
Senior, Robert B.; and Karasinski, Frederick, 4,281,442, Cl. 29-33.00M.

Kardas, Alan, to Institute of Gas Technology. Method and apparatus of heat-pulsed recuperation of energy. 4,281,982, Cl. 431-1.000.

Kariagin, Nikolai. to Whittaker Corporation. Disengaging apparatus. 4,281,867, Cl. 294-83.00R.

Kasai, Nobuharu. Automatic water supply device. 4,281,625, Cl. 119-77.000.

Kasai, Osamu: *See*—
Shimizu, Michio; Iwasaki, Yukio; Wagatsuma, Tadashi; and Kasai, Osamu, 4,282,415, Cl. 200-336.000.

Kato, Hiroshi; and Morita, Yasuhiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Mechanical clutch release system. 4,281,752, Cl. 192-99.00R.

Kato, Hisashi: *See*—
Kudo, Yoshio; Iwasa, Masakazu; and Kato, Hisashi, 4,281,622, Cl. 118-653.000.

Kato, Toshiharu: *See*—
Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.

Kato, Tutomu; and Houjyo, Susumu, to Sharp Kabushiki Kaisha. Sheet stripping members for fixing device for fixing images of an original document on sheets of copy materials. 4,281,623, Cl. 118-668.000.

Katz, Jerome; and Fogel, Sidney J. Apparatus for high volume distillation of liquids. 4,282,067, Cl. 202-180.000.

Katz, Lawrence E.: *See*—
Rothgery, Eugene F.; and Katz, Lawrence E., 4,282,169, Cl. 260-455.00A.

Kaukeinen, Joseph Y.: *See*—
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukeinen, Joseph Y., 4,282,354, Cl. 542-441.000.

Kawai Musical Instrument Mfg. Co. Ltd.: *See*—
Deutsch, Ralph, 4,281,574, Cl. 84-1.190.

Kawamoto, Yukio: *See*—
Imai, Masumi; Hirasawa, Kotaro; Suda, Seijo; and Kawamoto, Yukio, 4,282,573, Cl. 364-431.000.

Kawasaki Steel Corporation: *See*—
Kobayashi, Zenjiro; Aihara, Masaki; and Sato, Kuniaki, 4,281,984, Cl. 432-9.000.
Yamagata, Mitsukuni; Takitani, Keiichiro; Hasuno, Sadao; and Motoda, Kuniaki, 4,282,047, Cl. 148-143.000.

Kawazoe, Masayuki; Tomoda, Yasuro; Sasaki, Atsuo; and Kaneko, Isao, to Sumitomo Metal Mining Co., Ltd. Method of controlling the suction gas pressure of a sulfuric acid plant for treatment of smelter exhaust gas. 4,281,821, Cl. 266-44.000.

Kayabakogyokabushikikaisha: *See*—
Teruyama, Hideo, 4,281,974, Cl. 418-132.000.

Keegan, John J., Jr.: *See*—
Anthony, John D., Jr.; Keegan, John J., Jr.; and Lee, Jerald D., 4,282,431, Cl. 250-236.000.

Keegan, Richard E.: *See*—
Phillips, Barry A.; Spitler, Keith G.; and Keegan, Richard E., 4,282,332, Cl. 521-171.000.

Keen, Ronald W.: *See*—
LeBegue, Maurice K.; Keen, Ronald W.; and Keller, Donald E., 4,281,879, Cl. 299-64.000.

Keiser, Emil, to Inventio AG. Damping body for machine support arrangements. 4,281,739, Cl. 181-207.000.

Keller, Donald E.: *See*—
LeBegue, Maurice K.; Keen, Ronald W.; and Keller, Donald E., 4,281,879, Cl. 299-64.000.

Keller, Rolf, to SRO-Kugellagerwerke J. Schmid-Roost AG. Measuring apparatus, especially for measuring forces acting upon a bearing or the like. 4,281,539, Cl. 73-862.540.

Kelly, Brendan W.; and Boily, Robert L., to Scapa Dryers (Canada) Ltd. Reversible forming fabric having dominating floats on each face. 4,281,688, Cl. 139-383.00A.

Kemlite Corporation: *See*—
Morse, Donald B., 4,282,049, Cl. 156-62.200.

Kensen Co., Ltd.: *See*—
Sato, Masaharu; and Sugiura, Michio, 4,282,005, Cl. 44-3.00R.

Kent Manufacturing Co., Inc.: *See*—
Hake, Kenneth A.; and Palen, Nelson J., 4,281,719, Cl. 172-710.000.

Kerey, Gyorgy: *See*—
Takacs, Istvan; Bosits, Gyula; Vereczkey, Endre; and Kerey, Gyorgy, 4,282,101, Cl. 210-403.000.

Kermarrec, Jean-Claude: *See*—
Berthet, Michel; Kermarrec, Jean-Claude; and Ravelet, Robert, 4,281,516, Cl. 62-3.000.

Kern, Gilbert G. Suspended woodbeam ceiling. 4,281,498, Cl. 52-780.000.

Kern, Hans; and Lichti, Reiner, to Siemens Aktiengesellschaft. Circuit arrangement for the operation of recording nozzles in ink mosaic recording devices. 4,282,535, Cl. 346-140.00R.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Loffel, Rudi, 4,282,433, Cl. 250-356.000.

Kertesz, Gabor; and Vago, Gyorgy, to Hirada Stechnikai Ipari Kutato Intezet. Penning sputter source. 4,282,083, Cl. 204-298.000.

Khan, Sultan W.; Ham, John K.; and Strissel, Richard A., to Dataproducts Corporation. Microprogrammable processor control printer system. 4,282,583, Cl. 364-900.000.

Khare, Gyaneshwari P., to Vulcan Materials Company. Use of hydrazine compounds as corrosion inhibitors in caustic solutions. 4,282,178, Cl. 422-13.000.

Kibblewhite, Kenneth H. Pipe couplings. 4,281,643, Cl. 126-450.000.

Kiene, Wilfried: *See*—
Nissen, Peter; Kiene, Wilfried; and Appel, Eggert, 4,281,552, Cl. 73-861.120.

Kienzle Uhrenfabriken GmbH: *See*—
Siefert, Roland; and Sauter, Roland, 4,282,596, Cl. 368-262.000.

Kiley, Leo R., to Teledyne Industries, Inc. Black smoke generator. 4,282,113, Cl. 252-359.0CG.

Kim, Chang J.: *See*—
Melchior, Michael T.; Milliman, George E.; Kim, Chang J.; and Chludzinski, George R., 4,282,193, Cl. 423-223.000.

Kim, Chang-Kyo; and Flaherty, Robert, to United States of America, Energy. O-Ring sealing arrangements for ultra-high vacuum systems. 4,281,841, Cl. 277-236.000.

Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, to NTN Toyo Bearing Company, Limited. Fuel injection device for internal combustion engines. 4,281,797, Cl. 239-533.120.

Kimberly-Clark Corporation: *See*—
Frick, Richard H.; and Enloe, Kenneth M., 4,281,619, Cl. 118-325.000.

Kimura, Hitoshi: *See*—
Irie, Shin-ichi; Uesugi, Kenji; and Kimura, Hitoshi, 4,282,333, Cl. 525-6.000.

King, Irvin B.: *See*—
Cramer, Gregory D.; King, Irvin B.; Sauerbrunn, Robert D.; and Strand, Albert T., 4,281,935, Cl. 366-174.000.

King, Richard M.: *See*—
Logan, Ted J.; and King, Richard M., 4,282,164, Cl. 260-428.500.

Kingma, Eildert: *See*—
Bakker, Eppe; Boiten, Ebbe; Kingma, Eildert; Lenting, Gerard J.; and Wijma, Willem S., 4,281,453, Cl. 30-43.600.

Kinoshita, Kunio, to Olympus Optical Co., Ltd. Cleaning device for an observation window of an endoscope. 4,281,646, Cl. 128-6.000.

Kippenhan, Herbert A., Jr.; Nelson, Eugene E.; and Ricker, George T., Jr., to GTE Automatic Electric Labs Inc. Shared maintenance terminal system. 4,282,399, Cl. 178-4.000.

Kirkpatrick, Paul F.: *See*—
Johnson, Alfred D.; and Kirkpatrick, Paul F., 4,281,513, Cl. 60-527.000.

Kitagawa, Masahiro; and Saito, Michiharu, to Olympus Optical Co., Ltd. Information display device for camera. 4,281,917, Cl. 354-289.000.

Kitajima, Masao: *See*—
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.

Kitayama, Seishi: *See*—
Yato, Fumihiro; Kitayama, Seishi; Tamura, Junso; Ishigami, Hikoichi; and Kuramatsu, Akira, 4,282,406, Cl. 179-1.0SC.

Kitko, David J.: *See*—
Nyquist, John D.; Kitko, David J.; and Stradling, Richard F., Jr., 4,281,421, Cl. 4-228.000.

Kitsukawa, Kazumi: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,282,141, Cl. 260-45.70R.

Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,282,205, Cl. 424-49.000.

Klaerner, Peter; Staiger, Gerhard; and Bronstert, Klaus, to BASF Aktiengesellschaft. Manufacture of homopolymers and copolymers of α-monoolefins. 4,282,341, Cl. 526-124.000.

Kleesattel, Claus, to Cavitron Corporation. Ultrasonically driven low-speed rotary motor. 4,281,987, Cl. 433-103.000.

Klein, Keith W. Self-cleating rope holder. 4,281,439, Cl. 24-130.000.

Klein, Robert R.: *See*—
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S.; and Klein, Robert R., 4,282,130, Cl. 260-29.6SQ.

Klemmensen, Per D.: *See*—
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,282,241, Cl. 424-274.000.

Klepov, Anatoly F.: *See*—
Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and Schelev, Mikhail Y., 4,282,427, Cl. 250-213.0VT.

Klier, Donald F.: *See*—
Vegh, Elmer S.; Klier, Donald F.; Schwerzler, Davis S.; and Castle, William F., 4,281,636, Cl. 126-369.000.

Klinkwitz, Kurt: *See*—
Alf, Reinhard; and Klinkwitz, Kurt, 4,282,526, Cl. 343-715.000.

Klockner-Humboldt-Deutz AG: *See*—
Buchner, Heinrich; and Horn, Hannes S., 4,281,963, Cl. 415-178.000.

Klose, Sigmar; Buschek, Herbert; and Schlumberger, Helmut, to Boehringer Mannheim GmbH. Compositions and method for reducing turbidity in samples. 4,282,001, Cl. 23-.230.

Kloss, John: *See*—
El Khadem, Hassan S.; Audichya, Thakur D.; and Kloss, John, 4,282,349, Cl. 536-4.000.

Kmetz, Allan R.; and Muller, Klaus, to BBC Brown, Boveri & Company Limited. Electro-optical device for the display of dark symbols composed of separately selectable display segments against a bright background and a means for addressing this device. 4,281,902, Cl. 350-336.000.

Kmiec, Chester J.: *See*—
Albright, James A.; and Kmiec, Chester J., 4,282,142, Cl. 260-45.70P.

Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., to Australasian Training Aids (Pty.) Ltd. Transducer apparatus for detecting airborne pressure pulse. 4,282,453, Cl. 310-335.000.

Knobel, Fritz; and Kuhn, Gerhard, to Ortopedia GmbH. Override lock assembly for a driving means. 4,281,747, Cl. 192-8.00C.

Knoell, Helmuth: *See*—
Benda, Rainer; Knoell, Helmuth; Neudoerfl, Peter; and Pennewiss, Horst, 4,282,132, Cl. 260-30.200.

Knorr-Bremse GmbH: *See*—
Wirth, Xaver, 4,281,745, Cl. 188-218.0XL.

Kobayashi, Chiaki: *See*—
Suga, Masaaki; Kobayashi, Chiaki; and Tohzima, Hisaaki, 4,281,751, Cl. 192-0.092.

Kobayashi, Sumio; and Matsushita, Tetsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric power converting apparatus. 4,282,568, Cl. 363-54.000.

Kobayashi, Takumi: *See*—
Shono, Tetsuji; and Kobayashi, Takumi, 4,281,913, Cl. 354-203.000.

Kobayashi, Yuzi; and Nishikatsu, Hiroshi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Rotatable disc support arrangement for angle measuring apparatus. 4,281,463, Cl. 33-299.000.

Kobayashi, Zenjiro; Aihara, Masaki; and Sato, Kuniaki, to Kawasaki Steel Corporation. Method of heating a side-burner type heating furnace for slab. 4,281,984, Cl. 432-9.000.

Kobe, Inc.: *See*—
Erickson, John W., 4,281,962, Cl. 415-89.000.

Kober, Hans, to Kugelfischer Georg Schafer & Co. Method of testing rotationally symmetrical bodies, especially balls, for defects. 4,281,548, Cl. 73-593.000.

Koch, Kurt: *See*—
Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans, 4,282,036, Cl. 106-97.000.

Kockums Construction AB: *See*—
Conrad, Ernst, 4,282,319, Cl. 435-69.000.

Koehler-Dayton, Inc.: *See*—
Iwans, Robert C.; Brennan, Edward J.; and Weik, Kirby B., 4,281,874, Cl. 297-163.000.

Koehring Company: *See*—
Nicholson, Robert D., 4,282,502, Cl. 335-266.000.

Koenen, Rudolf: *See*—
Adams, Horst; and Koenen, Rudolf, 4,281,817, Cl. 251-305.000.

Koerber, Charles F. Rotary wheelchair lift apparatus. 4,281,744, Cl. 187-9.00R.

Koh-I-Noor Rapidgoraph, Inc.: *See*—
Paschen, Rolf; and Martens, Rolf, 4,282,536, Cl. 346-140.00R.

Kohler, Armin; Hoffmann, Peter; Pelousek, Herbert; and Specht, Eduard, to Bayer Aktiengesellschaft. Process for the production of polyester fibers and filaments which can be dyed in the absence of carriers and the filaments and fibers produced thereby. 4,282,137, Cl. 260-40.00P.

Koike, Mamoru, to Kao Soap Co., Ltd. Antibacterial soap. 4,282,110, Cl. 252-107.000.

Kokelenberg, Hendrik E.: *See*—
Laridon, Urbain L.; DeWinter, Walter F.; and Kokelenberg, Hendrik E., 4,282,309, Cl. 430-281.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Yato, Fumihiro; Kitayama, Seishi; Tamura, Junso; Ishigami, Hikoichi; and Kuramatsu, Akira, 4,282,406, Cl. 179-1.0SC.

Kolind-Andersen, Hans: *See*—
Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, 4,282,241, Cl. 424-274.000.

Kollensperger, Dieter: *See*—
Dreiseitl, Walter; Kollensperger, Dieter; Salzmann, Theodor; Schlegel, Thomas; and Weigel, Wolf-Dieter, 4,282,473, Cl. 318-803.000.

Koller, Karl S. Energy absorbing load carrying strut and method of providing such a strut capable of withstanding cyclical loads exceeding its yield strength. 4,281,487, Cl. 52-167.000.

Kolosov, Ivan A.; Ivanyatov, Jury E.; and Kosholkin, Valery N. Method of assembling banks of battery electrodes. 4,281,452, Cl. 29-623.100.

Kometani, Thomas Y.; and Wood, Darwin L., to Bell Telephone Laboratories, Incorporated. Method of preparing optical fibers of silica. 4,282,196, Cl. 423-337.000.

Kominami, Yasuo: *See*—
Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,282,448, Cl. 307-273.000.

Kondrashova, Lidia I.: *See*—
Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and Schelev, Mikhail Y., 4,282,427, Cl. 250-213.0VT.

Konkle, Raymond L. Motion converting system. 4,281,852, Cl. 280-766.000.

Kononenko, Vasily S.: *See*—
Minasov, Alexandr N.; Likhogub, Evgeny P.; and Kononenko, Vasily S., 4,282,069, Cl. 202-228.000.

Konoshima, Katunaga: *See*—
Tanaka, Masahiro; and Konoshima, Katunaga, 4,281,674, Cl. 134-95.000.

Konrath, Karl: *See*—
Tomasch, Hellmut; Bacher, Robert; Konrath, Karl; Koster, Claus; and Nothdurft, Heinz, 4,281,558, Cl. 74-99.00R.

Konz, Elmar: *See*—
Bartmann, Wilhelm; Konz, Elmar; and Geyer, Harry M., 4,282,222, Cl. 424-250.000.
Bartmann, Wilhelm; Konz, Elmar; Kruse, Hansjorg; and Geyer, Harry M., 4,282,223, Cl. 424-250.000.

Kornfeld, Edmund C.: *See*—
Bach, Nicholas J.; and Kornfeld, Edmund C., 4,282,362, Cl. 546-84.000.

Koshishiba, Soichi; and Okazaki, Gosei, to Shibuya Kogyo Co., Ltd. Box packing machine and process. 4,281,499, Cl. 53-445.000.

Kosholkin, Valery N.: *See*—
Kolosov, Ivan A.; Ivanyatov, Jury E.; and Kosholkin, Valery N., 4,281,452, Cl. 29-623.100.

Koster, Claus: *See*—
Tomasch, Hellmut; Bacher, Robert; Konrath, Karl; Koster, Claus; and Nothdurft, Heinz, 4,281,558, Cl. 74-99.00R.

Koster, Richard A.: *See*—
Vishe, Richard A.; and Koster, Richard A., 4,281,957, Cl. 414-457.000.

Kouno, Masahiro: *See*—
Ito, Akira; Sasaki, Heizo; Osawa, Masanori; Kouno, Masahiro; and Iwata, Kenji, 4,282,114, Cl. 252-429.00B.

Kouns, Herbert H., to ABEX Corporation. Inlet inducer-impeller for piston pump. 4,281,971, Cl. 417-203.000.

Kowal, Samuel J.: *See*—
Adamski, Richard T.; and Kowal, Samuel J., 4,281,758, Cl. 198-398.000.

Kraft, Thomas L.; Vick, Howard A.; and Meador, James W., to KVM Engineering, Inc. Apparatus for testing the contamination of industrial liquids. 4,281,536, Cl. 73-53.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Hensolt, Theodor; and Rau, Peter, 4,282,065, Cl. 176-78.000.
Werres, Lothar, 4,282,063, Cl. 176-38.000.

Kraus, Shirley: *See*—
Fugent, Elmer G.; Fugent, Ruby M.; Kraus, Shirley; and Kraus, Wolfgang, 4,281,796, Cl. 239-310.000.

Kraus, Wolfgang: *See*—
Fugent, Elmer G.; Fugent, Ruby M.; Kraus, Shirley; and Kraus, Wolfgang, 4,281,796, Cl. 239-310.000.

Krause, Peter: *See*—
Krause, Ulrich; and Krause, Peter, 4,281,934, Cl. 366-30.000.

Krause, Ulrich; and Krause, Peter. Apparatus for mixing construction materials. 4,281,934, Cl. 366-30.000.

Krauss, Clifford J.: *See*—
Baggio, Edward G.; and Krauss, Clifford J., 4,282,075, Cl. 204-105.00R.

Kren, George J.; Urbanek, Karel; and Wheeler, William R., to Tencor Instruments. Probe for determining p or n-type conductivity of semiconductor material. 4,282,483, Cl. 324-158.00R.

Kretz, Carl, to Kretztechnik Gesellschaft m.b.H. Equipment for displaying section images of objects subjected to ultrasonic examination. 4,281,549, Cl. 73-626.000.

Kretztechnik Gesellschaft m.b.H.: *See*—
Kretz, Carl, 4,281,549, Cl. 73-626.000.

Krieg, Adrian H., to Widder Corporation. Nibbling tool. 4,281,459, Cl. 30-228.000.

Kringel, George N.; and Sachuk, Nicholas E., to A.C.A. Products, Inc. Light distributor. 4,282,560, Cl. 362-26.000.

Krobel, Heinz, to Agfa-Gevaert Aktiengesellschaft. Arrangement for opening and closing a closure of an opening in a film cassette. 4,281,915, Cl. 354-275.000.

Krolak, Leo V.: *See*—
Wakat, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., 4,282,454, Cl. 310-348.000.

Krone GmbH: *See*—
Forberg, Horst; and Radelow, Wolfgang, 4,281,885, Cl. 339-14.00R.

Krueger, Guenther. Method of pressure fusing a nut to a support sheet and product thereof, and machinery for practicing the method. 4,281,786, Cl. 228-116.000.

Krumkalns, Eriks V., to Eli Lilly and Company. Method for plant growth regulation. 4,282,030, Cl. 71-90.000.

Kruse, Hansjorg: *See*—
Bartmann, Wilhelm; Konz, Elmar; Kruse, Hansjorg; and Geyer, Harry M., 4,282,223, Cl. 424-250.000.

Kubiatowicz, James F., to Custom Concepts, Incorporated. Clay cutting lathe and method. 4,281,569, Cl. 82-1.00C.

Kudo, Yoshio; Iwasa, Masakazu; and Kato, Hisashi, to Fuji Photo Film Co., Ltd. Apparatus for developing electrostatic latent image. 4,281,622, Cl. 118-653.000.

Kudor, Toshiaki: *See*—
Kurosawa, Ryoichi; and Kudor, Toshiaki, 4,282,570, Cl. 363-87.000.

Kuehn, Erich, to ICI Americas Inc. Esters of tetracarboxylic acids and resins derived therefrom. 4,282,138, Cl. 260-40.00R.

Kuepper, Theodore A.; and Chapler, Robert S. Dynamic oil surface coalescer. 4,282,097, Cl. 210-200.000.

Kuffer, Fernand B.: *See*—
Winderman, Jay B.; and Kuffer, Fernand B., 4,282,527, Cl. 343-725.000.

Kugelfischer Georg Schafer & Co.: *See*—
Kober, Hans, 4,281,548, Cl. 73-593.000.

Kuhlen, Ernst; and Frohberg, Gunther, to Pierburg GmbH & Co. KG. Pneumatically operated adjusting device. 4,281,586, Cl. 91-52.000.

Kuhls, Jurgen, to Hoechst Aktiengesellschaft. Recovery of fluorinated emulsifying acids from basic anion exchangers. 4,282,162, Cl. 260-408.000.

Kuhn, Gerhard: *See*—
Knobel, Fritz; and Kuhn, Gerhard, 4,281,747, Cl. 192-8.00C.

Kullander, Gregor H.; Chatfield, Christopher G.; Mikus, Marian; and Westergren, Bo K., to Sandvik Aktiebolag. Method of preparing coated cemented carbide product and resulting product. 4,282,289, Cl. 428-457.000.

Kullendorff, Anders: *See*—
Borjesgard, Pehr; Cetrelli, Renzo; Kullendorff, Anders; Schon, Stur; and Wikner, Jan, 4,281,510, Cl. 60-39.320.

Kummeling, Jozef W. M.: *See*—
Horowitz, Alexandre; van der Hoorn, Rudolf J. G. A.; and Kummeling, Jozef W. M., 4,281,483, Cl. 51-328.000.

Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, to Nakano Vinegar Co., Ltd. Production of vinegar with high acetic acid concentration. 4,282,257, Cl. 426-17.000.

Kunishio, Misao; Shirai, Kenshi; and Takezi, Hiroyuki, to Sanko Steamship Co., Ltd., The. Apparatus for reforming fuel oil wherein ultrasonic waves are utilized. 4,282,100, Cl. 210-384.000.

Kurematsu, Akira: *See*—
Yato, Fumihiro; Kitayama, Seishi; Tamura, Junso; Ishigami, Hikoichi; and Kurematsu, Akira, 4,282,406, Cl. 179-1.0SC.

Kuronen, Seppo K. Solar heating system. 4,281,639, Cl. 126-435.000.

Kurosawa, Ryoichi; and Kudor, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling an output current of a controlled rectifier. 4,282,570, Cl. 363-87.000.

Kurosawa, Yoshinori: *See*—
Makino, Motohiko; Imamura, Kenji; and Kurosawa, Yoshinori, 4,282,302, Cl. 430-107.000.

Kurtz, Andrew D.: *See*—
Guiliano, Basil A.; Pfeffer, Henry A.; and Kurtz, Andrew D., 4,282,359, Cl. 544-192.000.

Kurtz, Stuart J.; Blakeslee, Theodore R., III; and Scarola, Leonard S., to Union Carbide Corporation. Method for reducing sharkskin melt fracture during extrusion of ethylene polymers. 4,282,177, Cl. 264-564.000.

Kusakabe, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pulse count type FM demodulator circuit. 4,282,490, Cl. 329-103.000.

Kuyel, Birol, to Western Electric Co., Inc. Methods and apparatus for generating plasmas. 4,282,267, Cl. 427-38.000.

KVM Engineering, Inc.: *See*—
Kraft, Thomas L.; Vick, Howard A.; and Meador, James W., 4,281,536, Cl. 73-53.000.

Kyushu Refractories Co., Ltd.: *See*—
Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayosi; and Yoshida, Tetsuro, 4,282,200, Cl. 423-598.000.

L. B. White Company, Inc.: *See*—
Quinlisk, Warren, 4,281,789, Cl. 236-44.00C.

Lackey, James A.; Nordwall, Harold L.; and Whitney, Charlie B., to Boeing Company, The. Underwing reflector solar array. 4,282,394, Cl. 136-245.000.

LaFont Corporation: *See*—
Heikkinen, Leo L.; and Lundborg, Charles L., 4,281,697, Cl. 144-326.00R.

Lagani, Anthony, Jr. Herbicide spray system. 4,281,780, Cl. 222-610.000.

La Grone, Charles H., to Garrett Corporation, The. Fuel control system. 4,281,509, Cl. 60-39.020.

Lake, Frank N.: *See*—
Spiegelberg, William D.; Moracz, Donald J.; and Lake, Frank N., 4,281,528, Cl. 72-46.000.

Lamarche, Bernard L. J.: *See*—
Duret, Maurice L.; Lamarche, Bernard L. J.; Declercq, Marc A.; and Martin, Robert D., 4,281,966, Cl. 416-134.00A.

Lamasney, Michael V.: *See*—
Dell, Harold R.; Holtsman, William L.; Lamasney, Michael V.; and Mortimer, Charles P. L., 4,281,994, Cl. 434-49.000.

Lambert, Ronald F., to Polaroid Corporation. Dye developer processes. 4,282,306, Cl. 430-218.000.

Lamond, Trevor G.; and Aboytes, Peter, to J. M. Huber Corporation. Carbon black process. 4,282,199, Cl. 423-461.000.

Lander, Naphtali: *See*—
Mechoulam, Raphael; Lander, Naphtali; and Dikstein, Shabtay, 4,282,248, Cl. 424-299.000.

Lang, Raimund: *See*—
Abend, Klaus; and Lang, Raimund, 4,282,577, Cl. 364-507.000.

Lang-Ree, Nils: *See*—
Baker, Edward D.; and Lang-Ree, Nils, 4,281,594, Cl. 99-386.000.

Lange, George P.: *See*—
Torok, Steve F.; Formica, Vincent A.; and Lange, George P., 4,282,585, Cl. 367-2.000.

Lange, Gerd, to Gebruder Thonet AG. Molded objects such as tables, chairs and the like. 4,281,602, Cl. 108-161.000.

Lansberry, John B., to Coalex, Inc. Televised remote control system of a continuous mining machine. 4,281,876, Cl. 299-1.000.

Laridon, Urbain L.; DeWinter, Walter F.; and Kokelenberg, Hendrik E., to Agfa-Gevaert, N.V. Photosensitive composition containing an ethylenically unsaturated compound, initiator and sensitizer. 4,282,309, Cl. 430-281.000.

Larson, Harold V., to Olin Corporation. Process for producing a calcium sulfate product containing low amounts of radium. 4,282,192, Cl. 423-166.000.

Laser, Vadim: *See*—
Chadima, George E., Jr.; and Laser, Vadim, 4,282,425, Cl. 235-462.000.

Latassa, Frank M.; Bienvenue, Roland L.; Poirier, Charles H.; and Wallace, John, to GTE Products Corporation. Mercury dispenser for arc discharge lamps. 4,282,455, Cl. 313-177.000.

Lavagnino, Edward R.; Pike, Andrew J.; and Campbell, Jack B., to Eli Lilly and Company. 9-Carbamoyl-9-(2-cyanoethyl)fluorenes. 4,282,170, Cl. 260-465.00D.

Lavoisey, Yves: *See*—
Nierlich, Jean; and Lavoisey, Yves, 4,281,431, Cl. 15-1.50R.

Lawrence, Kenneth: *See*—
Lupton, Donald B.; and Lawrence, Kenneth, 4,282,053, Cl. 156-264.000.

Lawson, John D.: *See*—
Evetts, Samuel G.; Lawson, John D.; and Penn, William D., 4,282,589, Cl. 367-90.000.

Layciak, Stephen G.: *See*—
Johnston, Robert J.; Layciak, Stephen G.; and Cametti, George M., 4,282,414, Cl. 200-160.000.

Lazareth, Michel: *See*—
Ducroquet, Jean-Louis; and Lazareth, Michel, 4,282,500, Cl. 335-18.000.

Le Carbone (Great Britain) Limited: *See*—
Davies, Pamela M., 4,281,859, Cl. 285-55.000.

LeBegue, Maurice K.; Keen, Ronald W.; and Keller, Donald E., to National Mine Service Company. Stabilizing assembly for a mining machine. 4,281,879, Cl. 299-64.000.

Lebet, Jean-Pierre: *See*—
Boegli, Serge; and Lebet, Jean-Pierre, 4,281,591, Cl. 493-45.000.

Leco Corporation: *See*—
Bredeweg, Roger L.; O'Brien, Larry S.; and Vallance, Charles B., 4,282,183, Cl. 422-78.000.

Ledex, Inc.: *See*—
Myers, John L., 4,282,501, Cl. 335-258.000.

Lee, Jerald D.: *See*—
Anthony, John D., Jr.; Keegan, John J., Jr.; and Lee, Jerald D., 4,282,431, Cl. 250-236.000.

Lee, Roland E.; Berger, Alfred G.; Sowers, Dennis A.; Sergeant, Richard J.; and Behrens, Hermann W., to United States of America, Navy. Low turbulence wind tunnel stilling chamber. 4,281,540, Cl. 73-147.000.

Lee, Ta-jyh: *See*—
Smith, Robert L.; and Lee, Ta-jyh, 4,282,155, Cl. 260-343.500.

Lee, Tzuo-Chang; and Skogen, John D., to Honeywell Inc. Polyvinyl blocking layer for preventing charge injection in a thermoplastic photoconductive device for holography. 4,282,294, Cl. 430-1.000.

Lee, Tzuo-Chang; and Lin, Jacob W., to Honeywell Inc. Element for thermoplastic recording. 4,282,295, Cl. 430-2.000.

Lee, Wooyoung: *See*—
Gross, Benjamin; and Lee, Wooyoung, 4,282,084, Cl. 208-113.000.

Lee, Yun S. Insulated structure. 4,281,495, Cl. 52-584.000.

Lefer, Allan M., to Thomas Jefferson University. Method of increasing coronary blood flow with ibuprofen. 4,282,252, Cl. 424-317.000.

Lehman, Maurice E.; and Gehman, Roland P., to Lehman, Maurice E. Wheelbarrow transport device. 4,281,950, Cl. 410-3.000.

Leidich, Arthur J., to RCA Corporation. Reference current supply circuits. 4,282,478, Cl. 323-316.000.

Leisure Products, Inc.: *See*—
Moeser, Denis S., 4,281,426, Cl. 9-7.000.

Leleu, Jean, to Etablissements A. Voisin. Centrifugal casting machine, equipped with means for stripping and automatic release of the resulting castings. 4,281,707, Cl. 164-292.000.

LeMahieu, Ronald A., to Hoffmann-La Roche Inc. 7-Methylthio or methylsulfinyl-5-oxo-5H-thiazolo[2,3-b]quinazoline-2-carboxylic acid. 4,282,360, Cl. 544-250.000.

Leman, Jean-Luc M.: *See*—
Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., 4,281,967, Cl. 416-145.000.

Lemburg, Jorn-Uwe, to E. C. H. Will (GmbH & Co.). Method and apparatus for making wire binders for pads or the like. 4,281,690, Cl. 140-71.00R.

Lemelstrich, Noam. Drip or trickle emitter. 4,281,798, Cl. 239-542.000.

Lenting, Gerard J.: *See*—
Bakker, Eppe; Boiten, Ebbe; Kingma, Eildert; Lenting, Gerard J.; and Wijma, Willem S., 4,281,453, Cl. 30-43.600.

Leonard, Charles A.: *See*—
Cale, Albert D., Jr.; and Leonard, Charles A., 4,282,243, Cl. 424-274.000.
Cale, Albert D., Jr.; and Leonard, Charles A., 4,282,244, Cl. 424-274.000.

Leopoldi, Norbert; and Heinrich, William P. Key holder. 4,281,527, Cl. 70-456.00R.

Lessig, John A.: *See*—
Hoffman, Paul H.; and Lessig, John A., 4,281,436, Cl. 17-72.000.

Le Thuy, Hung: *See*—
Poisson-Quinton, Philippe; Bevert, Amedee P.; and Le Thuy, Hung, 4,281,810, Cl. 244-75.00R.

LeVan, Eugene B. Window assembly having a single bendable glass panel. 4,281,476, Cl. 49-34.000.

LeVantine, Allan D. Automatic fingerprint card holder. 4,281,616, Cl. 118-31.500.

Levardon, Raymond: *See*—
Goutard, Rene; and Levardon, Raymond, 4,281,691, Cl. 141-1.000.

Lever Brothers Company: *See*—
Gutierrez, Eddie N., 4,282,156, Cl. 260-343.600.

LeVeux, Bernard, to Regie Nationale des Usines Renault. Seat belt restraining apparatus. 4,281,853, Cl. 280-804.000.

Levine, Stanley D., to U.S. Billiards, Inc. Repeating coin-operated mechanism. 4,281,755, Cl. 194-1.00J.

Lewis, Donald J.: *See*—
Sisson, Albert E.; and Lewis, Donald J., 4,281,792, Cl. 239-5.000.

Lewis, I. Earl, Jr., to Ford Aerospace & Communications Corp. Frontal reflector bracing. 4,281,900, Cl. 350-292.000.

Lewis M. Carter Mfg. Co., Inc.: *See*—
Carter, Lewis M., Sr., 4,282,091, Cl. 209-467.000.

Liauw, Koei-Liang; and Fisch, Michael H., to Argus Chemical Corporation. Preparation of trimethyltin chloride from dimethyltin dichloride. 4,282,165, Cl. 260-429.700.

Liauw, Koei-Liang; and Fisch, Michael H., to Argus Chemical Corporation. Preparation of lower trialkyltin hydride from trialkyltin chloride. 4,282,166, Cl. 260-429.700.

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Silber, Dieter; Fullmann, Marius; and Winter, Wolfgang, 4,282,542, Cl. 357-38.000.

Lichti, Reiner: *See*—
Kern, Hans; and Lichti, Reiner, 4,282,535, Cl. 346-140.00R.

Lieberman, Arthur L.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.

Lieberman, Leonard N., to TIF Instruments, Inc. Regulating circuit for gaseous impurity detector. 4,282,521, Cl. 340-632.000.

Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., to General Electric Company. Method of making helical metallic ribbon for continuous edge winding applications. 4,281,706, Cl. 164-463.000.

Likhogub, Evgeny P.: *See*—
Minasov, Alexandr N.; Likhogub, Evgeny P.; and Kononenko, Vasily S., 4,282,069, Cl. 202-228.000.

Lin, Chung-Yuan: *See*—
Dai, Sheng-Hong A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,282,383, Cl. 568-573.000.

Lin, Jacob W.: *See*—
Lee, Tzuo-Chang; and Lin, Jacob W., 4,282,295, Cl. 430-2.000.

Linatex Corporation of America: *See*—
Ennis, Robert E., 4,282,088, Cl. 209-17.000.

Linder, Ernst: *See*—
Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, 4,282,080, Cl. 204-195.00S.

Linder, Ernst C. G. Aspirator for air sampling. 4,281,545, Cl. 73-864.620.

Linder, Morris B. Balanced stem gate valve. 4,281,819, Cl. 251-328.000.

Linder, Peter J. Key-controlled lock for a barrier cable. 4,281,524, Cl. 70-18.000.

Lindsey, Hiram E.: *See*—
Braddick, Britt O.; and Lindsey, Hiram E., 4,281,711, Cl. 166-118.000.

Linke, Hans-Ralf: *See*—
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Wiemann, Gunter, 4,282,151, Cl. 260-326.00A.

Liontonia, Harry D. Design of crossover network for high fidelity speaker system. 4,282,402, Cl. 179-1.00D.

Lippl, Leo: *See*—
Engelsmann, Dieter; Nicko, Reinhard; Lippl, Leo; and Maas, Dieter, 4,281,911, Cl. 354-173.000.

Lipschutz, Paul, to Neiman S.A. Anti-theft devices for motor vehicles. 4,281,526, Cl. 70-202.000.

Lischewski, Manfred; and Adam, Gunter, to Akademie der Wissenschaften DER. Tagged gibberellins. 4,282,154, Cl. 260-343.30G.

List, Hans. Compression ignition direct injection internal combustion engine. 4,281,629, Cl. 123-279.000.

Litman, Alan L.; and Strode, James P. Wet-dry cementable coupling for plastic pipe. 4,281,856, Cl. 285-15.000.

Litton Systems, Inc.: *See*—
Hutchings, Thomas J., 4,281,930, Cl. 356-350.000.

Liu, Joseph K.: *See*—
Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.

Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, to Merck & Co., Inc. Synthesis of thienamycin via esters of (3SR, 4RS)-3-[(SR)-1-hydroxyethyl]-β,2-dioxo-4-azetidinebutanoic acid. 4,282,148, Cl. 260-239.00A.

Livingstone, Robert D.: *See*—
Forrest, John W.; and Livingstone, Robert D., 4,281,925, Cl. 356-73.100.

Lizzio, Vincent P. Method and apparatus for automatically applying and releasing automotive type parking brakes. 4,281,736, Cl. 180-271.000.

Ljung, Bo H. G., to Singer Company, The. High efficiency current regulator for ring laser gyroscope. 4,282,495, Cl. 331-94.50S.

Lo, Kuang-Hsin K.; and Nolan, Daniel A., to Corning Glass Works. Method for making polarizing glasses through extrusion. 4,282,022, Cl. 65-85.000.

Lo, Young S.: *See*—
Sheehan, John C.; and Lo, Young S., 4,282,149, Cl. 260-245.20R.

Lobachev, Viktor A.; Safronov, Vladimir G.; Danilova, Faina B.; and Lvov, Vladimir N. Composition for the manufacture of abrasive tools. 4,282,012, Cl. 51-309.000.

Lodec, Inc.: *See*—
Dickason, Allen D.; and Hildebrant, R. Laing, 4,281,728, Cl. 177-134.000.

Loffel, Rudi, to Kernforschungszentrum Karlsruhe GmbH. Apparatus for measuring the density of a multiphase stream. 4,282,433, Cl. 250-356.000.

Logan, Ted J.; and King, Richard M., to Procter & Gamble Company, The. Fractionation of alkylcarboxylate mixtures. 4,282,164, Cl. 260-428.500.

Login, Robert: *See*—
Anchor, Michael J.; and Login, Robert, 4,282,340, Cl. 526-93.000.

Long Year Company: *See*—
Tucker, John D.; Cozad, Ronald E.; and Kaiser, Robert A., 4,281,722, Cl. 175-57.000.

Longyear Company: *See*—
Runk, Terry M., 4,281,725, Cl. 175-246.000.

Loper, Carl R., Jr.: *See*—
Smith, Jeffery S.; Perepezko, John H.; Rasmussen, Don H.; and Loper, Carl R., Jr., 4,282,034, Cl. 75-232.000.

Lopez, Antonio M. Phonographic record spindle adaptor. 4,282,599, Cl. 369-262.000.

Lord, David E.; Petrini, Richard R.; and Carter, Gary W., to United States of America, Energy. Small diameter, deep bore optical inspection system. 4,281,929, Cl. 356-241.000.

L'Oreal: *See*—
Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; Mahieu, Claude; and Zorayan, Vahan, 4,282,203, Cl. 424-47.000.

Lours, Sylvie: *See*—
Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, 4,282,112, Cl. 252-301.10W.

Lovitt, Estel L., to Mitchell Equipment Corp. Rail threading device. 4,281,868, Cl. 294-106.000.

Lowdenslager, John; and Zatsky, Norman C., to Timex Corporation. Method for digital frequency trimming an oscillator in an electronic timepiece. 4,282,595, Cl. 368-200.000.

Lowder, Richard K.: *See*—
Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., 4,282,597, Cl. 368-280.000.

Lower, Jerry L., to Reliance Electric Company. Controlled start speed reducer. 4,281,565, Cl. 74-789.000.

Lozovoi, Valery I.: *See*—
Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and Schelev, Mikhail Y., 4,282,427, Cl. 250-213.0VT.

Lubbers, Marius H., to Everts & van der Weyden Exploitatiemaatschappij Ewem N.V. Method of manufacturing a resilient, single or double C-shaped rail clamp. 4,281,529, Cl. 72-215.000.

Luborsky, Fred E.: *See*—
Frischmann, Peter G.; Luborsky, Fred E.; and Tompkins, Russell E., 4,282,046, Cl. 148-121.000.

Lubrizol Corporation, The: *See*—
Hoke, Donald I., 4,282,171, Cl. 260-928.000.

Luca, Vincent A., Jr., to Bendix Corporation, The. Electrical connector. 4,281,887, Cl. 339-103.00M.

Lucas Industries Limited: *See*—
Sharpe, Raymond, 4,281,559, Cl. 74-200.000.

Luccarelli, Domenick, Jr.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.

Lucey, Michael F., to Sprague Electric Company. Electronic component with radiation-hardenable coating. 4,282,269, Cl. 427-54.100.

Luderer, Albert A.; and McDonald, Hugh C., to Corning Glass Works. Preparation of enriched whole virus radioligand. 4,282,315, Cl. 435-5.000.

Ludwig, Donald A.: *See*—
Mueller, George P.; Urban, Urban A.; Muenster, Kermit J.; and Ludwig, Donald A., 4,281,500, Cl. 53-211.000.

Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S.; and Klein, Robert R., to Exxon Research & Engineering Co. Process for controlled gelation of polymeric solution (C-669). 4,282,130, Cl. 260-29.6SQ.

Lundborg, Charles L.: *See*—
Heikkinen, Leo L.; and Lundborg, Charles L., 4,281,697, Cl. 144-326.00R.

Lundell, George F.: *See*—
Baldwin, John J.; Jones, James H.; and Lundell, George F., 4,282,240, Cl. 424-274.000.

Luotonen, Pekka; and Tolonen, Yrjo, to Valtion Teknillinen Tutkimuskeskus. Compound beam. 4,281,497, Cl. 52-730.000.

Lupton, Donald B.; and Lawrence, Kenneth, to PH Thermal Products Limited. Tube forming apparatus and method. 4,282,053, Cl. 156-264.000.

Lutz, Albert W., to American Cyanamid Company. Reductive alkylation and dehalogenation of m-nitrobenzyl halides. 4,282,380, Cl. 564-398.000.

Luwa AG: *See*—
Gruter, Johann; and Marki, Heinz, 4,282,058, Cl. 159-13.00R.

Luz, David W.; and Willis, Donald H., to RCA Corporation. Deflection and power supply circuit with reduced start-up drive. 4,282,460, Cl. 315-411.000.

Lvov, Vladimir N.: *See*—
Lobachev, Viktor A.; Safronov, Vladimir G.; Danilova, Faina B.; and Lvov, Vladimir N., 4,282,012, Cl. 51-309.000.

Lyman, Geoffrey J., to University of Queensland, The. Radiation measurements on mineral slurries. 4,282,434, Cl. 250-359.000.

M. D. Wood, Inc.: *See*—
Wood, Milton D.; and Silverman, Daniel, 4,281,713, Cl. 166-251.000.

Maas, Dieter: *See*—
Engelsmann, Dieter; Nicko, Reinhard; Lippl, Leo; and Maas, Dieter, 4,281,911, Cl. 354-173.000.

MacDonald, Timothy: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.

MacGregor, David C. Pacemaker electrode with porous system. 4,281,669, Cl. 128-784.000.

Machanian, William V.: *See*—
Hoskinson, William R.; and Machanian, William V., 4,282,575, Cl. 364-479.000.

Machida Endoscope Co., Ltd.: *See*—
Chikama, Toshio, 4,281,931, Cl. 356-372.000.

Mackenzie, John D.: *See*—
Hammel, Joseph J.; and Mackenzie, John D., 4,282,023, Cl. 65-134.000.

MacLean-Fogg Company: *See*—
Grube, William L., 4,281,699, Cl. 411-176.000.

MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. Amplifier with severed transmission lines. 4,282,491, Cl. 330-286.000.

MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. Modular multiple channel signal processor. 4,282,492, Cl. 330-286.000.

Madsen, Hans B.; Klemmensen, Per D.; and Kolind-Andersen, Hans, to A/S Cheminova. Organic fluoro-imides, their preparation and use. 4,282,241, Cl. 424-274.000.

Magbanua, Ligaya G.: *See*—
Vogt, B. Richard; and Magbanua, Ligaya G., 4,282,226, Cl. 424-251.000.

Magnolato, Daniele, to Societe d'Assistance Technique Pour Produits Nestle S.A. Process for removing bitter taste from a fruit or vegetable extract, and the debittered extract thus obtained. 4,282,264, Cl. 426-599.000.

Mahaffey, Redge A.: *See*—
Kapetanakos, Christos A.; Pasour, John A.; Mahaffey, Redge A.; Golden, Jeffry; and Marsh, Spencer J., 4,282,436, Cl. 250-423.00R.

Mahieu, Claude: *See*—
Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; Mahieu, Claude; and Zorayan, Vahan, 4,282,203, Cl. 424-47.000.

Mahler, Georges: *See*—
Becker, Carl; Mahler, Georges; and Erzinger, Paul, 4,281,999, Cl. 8-527.000.

Maida, Osamu, to Nippon Kogaku K.K. Control circuit for camera or motor drive device. 4,281,912, Cl. 354-173.000.

Makino, Motohiko; Imamura, Kenji; and Kurosawa, Yoshinori, to TDK Electronics, Ltd. Ferrite powder type magnetic toner used in electrophotography and process for producing the same. 4,282,302, Cl. 430-107.000.

Makowski, Henry S.: *See*—
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S.; and Klein, Robert R., 4,282,130, Cl. 260-29.6SQ.

Malburg, Werner: *See*—
Muller, Martin; Seidel, Albert; Schmidt, Gunther; Schubert-Klempnauer, Holm; Malburg, Werner; and Brand, Rolf A., 4,281,518, Cl. 62-12.000.

Malone, Blanche M. Bowling shoe protector. 4,281,466, Cl. 36-7.10R.

Mandrell, Richard J.: *See*—
Baker, Thomas B.; and Mandrell, Richard J., 4,281,951, Cl. 410-70.000.

Mann, Gamdur S., to General Motors Corporation. Electric heater -method of making. 4,281,451, Cl. 29-611.000.

Mansfeld, Gunter: *See*—
Onken, Reiner; Mansfeld, Gunter; and Tersteegen, Johannes, 4,281,584, Cl. 91-1.000.

Manzoni, Mario. Plastics material supporting element, molded in the form of interlaced straw, effective to be fixed to a chair body. 4,281,875, Cl. 297-452.000.

Marino, James. Combination rechargeable flashlight and charger base. 4,282,562, Cl. 362-183.000.

Mark, Victor; and Wilson, Phillip S., to General Electric Company. Plasticized polycarbonate composition. 4,282,134, Cl. 260-30.80R.

Markham, Roger G., to Xerox Corporation. Ink jet method and apparatus using a thin film piezoelectric excitor for drop generation. 4,282,532, Cl. 346-75.000.

Marki, Heinz: *See*—
Gruter, Johann; and Marki, Heinz, 4,282,058, Cl. 159-13.00R.

Markova, Marie: *See*—
Didek, Stanislav; Fajt, Ludvik; Storek, Jaroslav; Andres, Jiri; Cada, Frantisek; and Markova, Marie, 4,281,507, Cl. 57-58.890.

Marlowe, J. Taylor. Spot face cutter. 4,281,947, Cl. 408-1.00R.

Marosko, Ronald J.: *See*—
Warren, Walter B.; and Marosko, Ronald J., 4,282,487, Cl. 324-445.000.

Marsh, Spencer J.: *See*—
Kapetanakos, Christos A.; Pasour, John A.; Mahaffey, Redge A.; Golden, Jeffry; and Marsh, Spencer J., 4,282,436, Cl. 250-423.00R.

Marsh, Walter H. W.; and Brienza, Michael J., to Singer Company, The. Button sewing device. 4,281,782, Cl. 223-102.000.

Martel, Alain: *See*—
Menard, Marcel; and Martel, Alain, 4,282,150, Cl. 260-245.20R.

Martens, Rolf: *See*—
Paschen, Rolf; and Martens, Rolf, 4,282,536, Cl. 346-140.00R.

Martin, Coy J. Lifting jack for vehicles or the like. 4,281,820, Cl. 254-133.00R.

Martin, Daniel P. Inner diameter chuck. 4,281,842, Cl. 279-2.00R.

Martin, Donald P., to Qwint Systems, Inc. Digital generation and control of variable phase-on motor energization. 4,282,472, Cl. 318-696.000.

Martin, Donald P.: *See*—
Budniak, Mitchell S.; and Martin, Donald P., 4,282,471, Cl. 318-685.000.

Martin, Richard J.: *See*—
Bondurant, David W.; and Martin, Richard J., 4,282,581, Cl. 364-737.000.

Martin, Robert D.: *See*—
Duret, Maurice L.; Lamarche, Bernard L. J.; Declercq, Marc A.; and Martin, Robert D., 4,281,966, Cl. 416-134.00A.

Martin, Walter H.; Briley, George C.; and Pao, Peter Y., to Refrigeration Engineering Corporation. Fluidized freezing. 4,281,521, Cl. 62-380.000.

Martinmaas, Werner W. Quickly adjustable ratchet wrench. 4,281,568, Cl. 81-134.000.

Marvel, John R.: *See*—
Rovee, D. Thomas; Marvel, John R.; and Mezick, James A., 4,282,216, Cl. 424-240.000.

Marx, Hans-Jurgen, to Trutzschler GmbH & Co. KG. Method and apparatus for opening textile fiber bales. 4,281,437, Cl. 19-80.00R.

Masai, Hiroshi: *See*—
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,282,257, Cl. 426-17.000.

Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,282,060, Cl. 162-162.000.

Masologites, George P., to Atlantic Richfield Company. Process for agglomerating coal. 4,282,004, Cl. 44-1.0SR.

Massa, Frank, to Stoneleigh Trust, The, Fred M. Dellorfano, Jr. & Donald P. Massa, Trustees. System for precisely and economically adjusting the resonance frequence of electroacoustic transducers. 4,281,484, Cl. 51-413.000.

Massachusetts Institute of Technology: *See*—
Hecht, Sidney M.; and Jordis, Ulrich, 4,282,361, Cl. 544-262.000.
Sheehan, John C.; and Lo, Young S., 4,282,149, Cl. 260-245.20R.

Massey, William A., to Molins Machine Company, Inc. Splicer control. 4,281,803, Cl. 242-58.100.

Massinger, Heinrich. Device for converting reciprocal linear motion to continuous rotary motion. 4,282,442, Cl. 290-1.00C.

Masu, Masanobu: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,282,139, Cl. 260-42.170.
Sugio, Akitoshi; Masu, Masanobu; Sasaki, Yukio; and Mizutani, Zenpei, 4,282,335, Cl. 525-68.000.

Masuda, Shunichi: *See*—
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuichi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.

Masuda, Yasushi: *See*—
Matsuhiro, Kenzi; and Masuda, Yasushi, 4,282,272, Cl. 427-126.300.

Masuzawa, Sigeaki: *See*—
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,282,404, Cl. 179-1.0SM.

Mathewson Corporation: *See*—
Redman, Howard E., 4,281,961, Cl. 414-751.000.

Matsuhiro, Kenzi; and Masuda, Yasushi, to Asahi Glass Company, Limited. Method for forming electrochromic film. 4,282,272, Cl. 427-126.300.

Matsumoto, Nobuo, to Fuji Photo Film Co., Ltd. Plate feeding apparatus for printing apparatus. 4,281,922, Cl. 355-99.000.

Matsuo, Takashi; and Tsushima, Kazunori, to Sumitomo Chemical Company, Limited. Process for producing cyclopentenolones. 4,282,372, Cl. 560-121.000.

Matsuo, Takeshi: *See*—
Suzuki, Masao; Matsuo, Takeshi; and Yamada, Naomichi, 4,282,163, Cl. 260-409.000.

Matsushima Kogyo Kabushiki Kaisha: *See*—
Iizawa, Nobutsugu, 4,282,498, Cl. 333-186.000.

Matsusnita Electric Industrial Co., Ltd.: *See*—
Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, 4,282,480, Cl. 324-61.00R.
Fukunaga, Masao; Niino, Fusao; and Nonoguchi, Hiroshi, 4,281,423, Cl. 4-537.000.

Matsushita, Fujio: *See*—
Muramoto, Makoto; Ishida, Nobuyuki; and Matsushita, Fujio, 4,282,117, Cl. 252-508.000.

Matsushita, Tetsushi: *See*—
Kobayashi, Sumio; and Matsushita, Tetsushi, 4,282,568, Cl. 363-54.000.

Matsuura, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray photographing machine using sheet films. 4,282,439, Cl. 250-470.000.

Mattor, John A.; and Price, Lawrence, to Scott Paper Company. Coating composition for release sheets. 4,282,054, Cl. 156-289.000.

Matty, Thomas C., to Westinghouse Electric Corp. Transit vehicle motor effort control apparatus and method. 4,282,466, Cl. 318-434.000.

Matunaga, Masatugu: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,282,139, Cl. 260-42.170.

Mauer, Helmut: *See*—
Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, 4,282,080, Cl. 204-195.00S.

Maurer, Franz, to Robert Bosch GmbH. System for optimizing the fuel consumption of an internal combustion engine. 4,281,567, Cl. 74-866.000.

Maxey, Carl W.: *See*—
Howard, Vincent M.; Maxey, Carl W.; and Dellett, John P., 4,281,696, Cl. 144-312.000.

Maxson, Dale E.; and Ober, David, to Barber-Colman Company. Double induction unit. 4,281,592, Cl. 98-38.00R.

Mayer, Jerome F.: *See*—
O'Rear, Dennis J.; and Mayer, Jerome F., 4,282,085, Cl. 208-120.000.

Mazeau, Jean P.; and Seward, Thomas P., III, to Corning Glass Works. Method of making photochromic glasses suitable for simultaneous heat treatment and shaping. 4,282,021, Cl. 65-30.00R.

McAlpine, James B.; and Carney, Ronald E., to Abbott Laboratories. 1-Epi-2-deoxyfortimicin B and derivatives. 4,282,211, Cl. 424-180.000.

McAuliffe, Donald C.: *See*—
Robertson, King G.; and McAuliffe, Donald C., 4,282,044, Cl. 148-2.000.

McCall, John M.: *See*—
DeGeeter, Melvin J.; and McCall, John M., 4,282,228, Cl. 424-251.000.

McCarthy, Jeremiah P.: *See*—
Barry, Vincent J.; and McCarthy, Jeremiah P., 4,281,448, Cl. 29-577.00C.

McChesney, John L.; Tackland, Thomas A.; and Turner, Ian, to Xerox Corporation. Liquid developer spear head access mechanism. 4,281,620, Cl. 118-410.000.

McDonald, Hugh C.: *See*—
Luderer, Albert A.; and McDonald, Hugh C., 4,282,315, Cl. 435-5.000.

McDonald, James A.; and Stachel, Earl F., to Union Carbide Corporation. Plastic bag handling system. 4,281,828, Cl. 493-12.000.

McDonnell Douglas Corporation: *See*—
Miller, George J.; and Sutter, George W., 4,281,447, Cl. 29-568.000.

McElhaney, William G., to Anvil Corporation. Apparatus for cutting and forming tubing. 4,281,530, Cl. 72-294.000.

McElroy, David J., to Texas Instruments Incorporated. High density floating gate EPROM programmable by charge storage. 4,282,446, Cl. 307-238.500.

McFadyen, Robert J.: *See*—
Peil, William; and McFadyen, Robert J., 4,282,462, Cl. 315-46.000.

McGarry, Errol J.; and Forsyth, Bruce A., to ICI Australia Limited. 2,6-Benzyl substituted phenols. 4,282,390, Cl. 568-720.000.

McGinnis, Merrill F. Safety shower head. 4,281,790, Cl. 236-93.00B.

McGuire, Susan; and Cannon, Michael. Pocket calculator with grade averaging function. 4,282,580, Cl. 364-734.000.

McJunkin Corporation: *See*—
McJunkin Jr., Howard P.; and Rowley, Larry W., 4,282,564, Cl. 362-217.000.

McJunkin Jr., Howard P.; and Rowley, Larry W., to McJunkin Corporation. Triangular enclosure for tubular light source. 4,282,564, Cl. 362-217.000.

McKnight, William J., to Howe-Baker Engineers, Inc. Gas to liquid diffuser. 4,282,172, Cl. 261-76.000.

McLaughlin, Joseph E., to Du Pont de Nemours, E. I., and Company. Diethyl fumarate reactive diluent for air dry coatings. 4,282,124, Cl. 260-22.00A.

McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S. Apparatus for bending and tempering glass. 4,282,026, Cl. 65-273.000.

McMullen, Edward D. Fishing leader storage reel. 4,281,806, Cl. 242-125.100.

McMullen, James W. Magnetic strip separator. 4,281,784, Cl. 226-118.000.

McNab, Incorporated: *See*—
Burbank, John E., III, 4,281,537, Cl. 73-862.330.

McNary, James F.; and Person, Abraham, to Global Marine, Inc. Connection of the upper end of an ocean upwelling pipe to a floating structure. 4,281,614, Cl. 114-264.000.

McWilliams, Joseph E. Method and apparatus for unloading bulk mail vans. 4,281,955, Cl. 414-398.000.

Mead Corporation, The: *See*—
Werner, Charles E., 4,282,275, Cl. 427-428.000.

Meador, James: *See*—
Houston, Robert K.; and Meador, James, 4,281,933, Cl. 356-425.000.

Meador, James W.: *See*—
Kraft, Thomas L.; Vick, Howard A.; and Meador, James W., 4,281,536, Cl. 73-53.000.

Mech, Harold W.: *See*—
Wakat, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., 4,282,454, Cl. 310-348.000.

Mechoulam, Raphael; Lander, Naphtali; and Dikstein, Shabtay. Pinene derivatives and pharmaceutical compositions containing the same. 4,282,248, Cl. 424-299.000.

Meckel, Joachim F.: *See*—
Flockenhaus, Claus; Galow, Manfred; Meckel, Joachim F.; and Joseph, Horst G., 4,282,068, Cl. 202-227.000.

Mecone, David W.: *See*—
Shaffer, John W.; Colville, William T.; and Mecone, David W., 4,282,558, Cl. 362-15.000.

Medtronic, Inc.: *See*—
Duggan, Stephen R., 4,281,664, Cl. 128-696.000.

Mee, David K.; and Stephens, Albert E., to United States of America, Energy. Automatic thermocouple positioner for use in vacuum furnaces. 4,281,985, Cl. 432-205.000.

Meeks, Fredrick T., to General Electric Company. Electronic scale and battery support. 4,281,727, Cl. 177-128.000.

Meibaum, Raymond K.: *See*—
Barnes, J. Ray; Holdegraver, Robert E.; and Meibaum, Raymond K., 4,282,263, Cl. 426-572.000.

Meiri, Toshimi: *See*—
Yamada, Ryozo; Okamoto, Naomichi; and Meiri, Toshimi, 4,281,893, Cl. 350-96.310.

Meisner, Alfred; Grasser, Hans; and Glasmacher, Peter, to Diehl GmbH & Co. Process and arrangement for the electronic control of the input pulses of a manually rotatable pulse generator into an electronic counter. 4,282,513, Cl. 340-149.00R.

Mekosh, George, Jr.; and Hulse, David O., to Budd Company, The. Anti-locking mechanism. 4,281,881, Cl. 303-99.000.

Melchior, Michael T.; Milliman, George E.; Kim, Chang J.; and Chludzinski, George R., to Exxon Research & Engineering Co. Process for converting cyclic urea to corresponding diamine in a gas treating system. 4,282,193, Cl. 423-223.000.

Melillo, David G.: *See*—
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,282,148, Cl. 260-239.00A.

Menard, Marcel; and Martel, Alain, to Bristol-Myers Company. 2,6-Disubstituted penem compounds. 4,282,150, Cl. 260-245.20R.

Meneghello, Gaetano. Case structure for rotary machines. 4,281,973, Cl. 417-424.000.

Mengeu, Gary L., to GTE Products Corporation. Electrical wiring box. 4,281,773, Cl. 220-3.200.

Merck & Co., Inc.: *See*—
Amato, Joseph S.; Karady, Sandor; and Weinstock, Leonard M., 4,282,364, Cl. 548-202.000.
Baldwin, John J.; Jones, James H.; and Lundell, George F., 4,282,240, Cl. 424-274.000.
Hannah, John, 4,282,219, Cl. 424-246.000.
Kahan, Jean S.; and Kahan, Frederick M., 4,282,322, Cl. 435-119.000.
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,282,148, Cl. 260-239.00A.
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,282,365, Cl. 548-252.000.
Smith, Robert L.; and Lee, Ta-jyh, 4,282,155, Cl. 260-343.500.

Mercusot, Michel: *See*—
Gaudriot, Lionel; and Mercusot, Michel, 4,281,551, Cl. 73-647.000.

Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of p-substituted aromatic carbamic acid esters. 4,282,368, Cl. 560-24.000.

Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of methylene-bis-phenylcarbamic acid esters and of polymethylene-polyphenylcarbamic acid esters. 4,282,370, Cl. 560-25.000.

Merlin Gerin: *See*—
Ducroquet, Jean-Louis; and Lazareth, Michel, 4,282,500, Cl. 335-18.000.

Messer Griesheim GmbH: *See*—
Auer, Rupert, 4,282,419, Cl. 219-137.440.
Bucker, Werner; and Rademacher, Christian, 4,282,273, Cl. 427-398.300.
Moller, Karlheinz, 4,281,822, Cl. 266-50.000.

Messerschmitt-Bolkow-Blohm GmbH: *See*—
Muller, Martin; Seidel, Albert; Schmidt, Gunther; Schubert-Klempnauer, Holm; Malburg, Werner; and Brand, Rolf A., 4,281,518, Cl. 62-12.000.
Petters, Claus, 4,281,427, Cl. 9-9.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Kanics, Andras, 4,281,946, Cl. 406-95.000.

Metals, Inc.: *See*—
Clarke, Beresford N.; and Shedd, Wilfred G., 4,281,824, Cl. 266-251.000.

Metcalfe, Robert M.: *See*—
Boggs, David R.; and Metcalfe, Robert M., 4,282,512, Cl. 340-147.0LP.

Methanol Chemie Nederland V.o.F.: *See*—
Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; Suen, Kwai W.; and Van Doorn, Anton J., 4,282,119, Cl. 260-6.000.

Metz, Ulrich; and Michaud, Horst, to SKW Trostberg Aktiengesellschaft. Hyperacidic solid metal lactates, process for producing same. 4,282,385, Cl. 562-589.000.

Mezick, James A.: *See*—
Rovee, D. Thomas; Marvel, John R.; and Mezick, James A., 4,282,216, Cl. 424-240.000.

Michaud, Horst: *See*—
Metz, Ulrich; and Michaud, Horst, 4,282,385, Cl. 562-589.000.

Michigan Technological University, Board of Control of: *See*—
El Khadem, Hassan S.; Audichya, Thakur D.; and Kloss, John, 4,282,349, Cl. 536-4.000.

Michl, Rudy; and Wollwage, Peter, to Perdent, GmbH. Dental prostheses. 4,281,991, Cl. 433-202.000.

Mickowski, John: *See*—
Elkin, Bernard P.; and Mickowski, John, 4,282,514, Cl. 235-310.000.

Middleton, Peter. Electronic tuning device. 4,281,577, Cl. 84-454.000.

Midwest Silo Company: *See*—
Seay, Nicholas J., 4,281,754, Cl. 193-34.000.

Mikus, Marian: *See*—
Kullander, Gregor H.; Chatfield, Christopher G.; Mikus, Marian; and Westergren, Bo K., 4,282,289, Cl. 428-457.000.

Mill-Craft Housing Corp.: *See*—
Rehbein, Erwin G., 4,281,830, Cl. 272-1.00E.

Miller, Alvin W. Hair curler. 4,281,673, Cl. 132-39.000.

Miller, Donald M. Control member for anaesthesia apparatus. 4,281,652, Cl. 128-204.250.

Miller, George J.; and Sutter, George W., to McDonnell Douglas Corporation. Detachable tool interface system for a robot. 4,281,447, Cl. 29-568.000.

Miller, James; Eifrid, Walter E.; and Hacker, Jay P., to International Harvester Company. Motor truck hood opening damper restraint. 4,281,733, Cl. 180-69.00C.

Miller, Viktor A.: *See*—
Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and Schelev, Mikhail Y., 4,282,427, Cl. 250-213.0VT.

Milliman, George E.: *See*—
Melchior, Michael T.; Milliman, George E.; Kim, Chang J.; and Chludzinski, George R., 4,282,193, Cl. 423-223.000.

Mills, King L., to Phillips Petroleum Company. Apparatus for reducing non-gaseous pollutants. 4,281,512, Cl. 60-311.000.

Milton, Russell E. Automotive charger system. 4,282,475, Cl. 320-6.000.

Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, to Argus Chemical Corporation. Ortho-substituted phenyl phosphite additive composition. 4,282,141, Cl. 260-45.70R.

Minasov, Alexandr N.; Likhogub, Evgeny P.; and Kononenko, Vasily S. Coke dry quenching apparatus. 4,282,069, Cl. 202-228.000.

Minemet Recherche: *See*—
Demarthe, Jean-Michel; Fossi, Paolo; and Guery, Dominique, 4,282,188, Cl. 423-10.000.

Minn, James, to Boots Hercules Agrochemicals Co. Process for preparing esters of O,O-dialkyl dithiophosphoric acid. 4,282,153, Cl. 260-340.600.

Minnesota Mining and Manufacturing Company: *See*—
Ethen, John L., 4,282,281, Cl. 428-149.000.

Minnetti, Federico, to Officine Minnetti di Ornella Raveggi & C. S.A.S. Hank transfer apparatus. 4,281,959, Cl. 414-668.000.

Minolta Camera Kabushiki Kaisha: *See*—
Yamaguchi, Tamikazu, 4,281,908, Cl. 350-476.000.

Miro Manufacturing Company: *See*—
Chandick, Michael D.; Chandick, Robert M.; and Ricchio, Pasquale, 4,281,849, Cl. 280-655.000.

Mr. Transmission, Inc.: *See*—
Venuto, Ralph A., 4,281,562, Cl. 74-473.00R.

Mitani, Hiroshi; and Uozumi, Kenichi, to Yoshida Kogyo K.K. Cantilevered braking guide for attaching slide fastener chains. 4,281,608, Cl. 112-150.000.

Mitchell, Edson, to Betz, Charles F. Filtering apparatus. 4,282,094, Cl. 210-167.000.

Mitchell Equipment Corp.: *See*—
Lovitt, Estel L., 4,281,868, Cl. 294-106.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Sakurai, Toshiyuki, 4,281,627, Cl. 123-146.50A.

Mitsubishi Gas Chemical Company, Inc.: *See*—
Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, 4,282,139, Cl. 260-42.170.
Sugio, Akitoshi; Masu, Masanobu; Sasaki, Yukio; and Mizutani, Zenpei, 4,282,335, Cl. 525-68.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Atsukawa, Masumi; Nishimoto, Yoshihiko; Yokoyama, Naruo; and Sera, Toshikuni, 4,282,115, Cl. 252-440.000.

Mitsui Toatsu Chemicals, Inc.: *See*—
Ito, Akira; Sasaki, Heizo; Osawa, Masanori; Kouno, Masahiro; and Iwata, Kenji, 4,282,114, Cl. 252-429.00B.

Mitsuya, Yoshihide. Mechanical pencil. 4,281,939, Cl. 401-54.000.

Miyamoto, Yukihiko: *See*—
Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,282,448, Cl. 307-273.000.

Miyasaka, Mamoru, to Kabushiki Kaisha Suwa Seikosha. Indicating member advancing mechanism. 4,282,592, Cl. 368-37.000.

Mizobuchi, Yuzo: *See*—
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.

Mizutani, Zenpei: *See*—
Sugio, Akitoshi; Masu, Masanobu; Sasaki, Yukio; and Mizutani, Zenpei, 4,282,335, Cl. 525-68.000.

Mobay Chemical Corporation: *See*—
Phillips, Barry A.; Spitler, Keith G.; and Keegan, Richard E., 4,282,332, Cl. 521-171.000.

Mobil Oil Corporation: *See*—
Givens, Wyatt W., 4,282,440, Cl. 250-499.000.
Gross, Benjamin; and Lee, Wooyoung, 4,282,084, Cl. 208-113.000.
Ilaria, Joseph E., 4,282,123, Cl. 260-18.0PT.

Mobius, Werner. Pencil sharpener. 4,281,698, Cl. 145-3.310.

Mock, George E.: *See*—
Bevers, Robert C.; Durr, Helmut E.; and Mock, George E., 4,281,617, Cl. 118-68.000.

Modrovich, Ivan E. Stabilized enzymic solutions for determining urea. 4,282,316, Cl. 435-12.000.

Moeser, Denis S., to Leisure Products, Inc. Boat seat mounting unit. 4,281,426, Cl. 9-7.000.

Mohiuddin, Gulam, to International Telephone & Telegraph Corporation. Process for preparing polyurethane molded part. 4,282,285, Cl. 428-315.000.

Mohr, Siegfried H., to Quantor Corporation. Quick change lens mount. 4,281,895, Cl. 350-257.000.

Moitzheim, Paul H.: *See*—
Grosch, Karl A.; Moitzheim, Paul H.; Schloesser, Gert; and Hensgens, Daniel J. M., 4,281,702, Cl. 152-209.00R.

Moldenhauer, Jeanne. Cell culture medium supplement. 4,282,326, Cl. 435-240.000.

Molins Machine Company, Inc.: *See*—
Massey, William A., 4,281,803, Cl. 242-58.100.

Moller, Karlheinz, to Messer Griesheim GmbH. Device for cutting a work piece manufactured in a continuous casting plant. 4,281,822, Cl. 266-50.000.

Molski, Bernard E. Wheel chair hoist assembly for vehicles. 4,281,958, Cl. 414-542.000.

Molzahn, Herbert W., to International Harvester Company. Braking and speed control system. 4,281,737, Cl. 180-307.000.

Monhemius, Andrew J.: *See*—
Thorsen, Gunnar; and Monhemius, Andrew J., 4,282,189, Cl. 423-24.000.

Monnier, Milton H.: *See*—
Pellicori, Samuel F.; and Monnier, Milton H., 4,282,290, Cl. 428-472.000.

Monsanto Company: *See*—
D'Amico, John J., 4,282,029, Cl. 71-90.000.
Hoagland, John C.; Farmer, Peter H.; and Carabetta, Rocco M., Jr., 4,281,980, Cl. 425-461.000.

Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., to International Fla-

vors & Fragrances Inc. Organoleptic uses of 2- and 3-cyclotetradecen-1-ones. 4,282,274, Cl. 427-402.000.
Moore, Brian, to Pennwalt Corporation. Automatic safety clutch device for flexible drives. 4,281,504, Cl. 56-10.300.
Moore, Harry W., III; and Quack, Steven M., to NCR Corporation. Multiprocessor memory access system. 4,282,572, Cl. 364-200.000.
Moracz, Donald J.: *See—*
Spiegelberg, William D.; Moracz, Donald J.; and Lake, Frank N., 4,281,528, Cl. 72-46.000.
Moreau, Deborah L., to Motorola, Inc. Redundant clock signal generating circuitry. 4,282,493, Cl. 331-2.000.
Morgan, Howard W., Jr., to Filter Specialists, Inc. Filter top hinge. 4,282,098, Cl. 210-238.000.
Morishita, Masanobu, to Nippon Electric Co., Ltd. Color image pick-up apparatus. 4,282,547, Cl. 358-44.000.
Morita, Yasuhiro: *See—*
Kato, Hiroshi; and Morita, Yasuhiro, 4,281,752, Cl. 192-99.00R.
Moriyama, Shigeo, to Hitachi, Ltd. Positioning control system. 4,282,469, Cl. 318-619.000.
Morris, Hugh C., to Caterpillar Tractor Co. Pressure modulating selector valve. 4,281,676, Cl. 137-102.000.
Morris, Thomas E.: *See—*
Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., 4,282,533, Cl. 346-75.000.
Morrow, Robert D., to Catalyst Research Corporation. Combination seismic/magnetic transducer with floating magnet. 4,282,484, Cl. 324-207.000.
Morse, Donald B., to Kemlite Corporation. Method for making resin panels. 4,282,049, Cl. 156-62.200.
Mortimer, Charles P. L.: *See—*
Dell, Harold R.; Holtsman, William L.; Lamasney, Michael V.; and Mortimer, Charles P. L., 4,281,994, Cl. 434-49.000.
Morton, David C., to Baker Perkins Holdings Limited. Apparatus for feeding articles to packaging machines. 4,281,757, Cl. 198-358.000.
Motoda, Kuniaki: *See—*
Yamagata, Mitsukuni; Takitani, Keiichiro; Hasuno, Sadao; and Motoda, Kuniaki, 4,282,047, Cl. 148-143.000.
Motorola Inc.: *See—*
Eymann, Steven W.; Fried, Mark A.; and Harris, Thomas L., 4,282,524, Cl. 343-14.000.
Moreau, Deborah L., 4,282,493, Cl. 331-2.000.
Nowak, Robert A., 4,282,544, Cl. 357-72.000.
Schroeder, Daniel R., 4,282,602, Cl. 455-169.000.
Wakat, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., 4,282,454, Cl. 310-348.000.
Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., to Societe Nationale Industrielle Aerospatiale. Resonator device for damping the vibrations of a rotor of a rotary-wing aircraft. 4,281,967, Cl. 416-145.000.
Moulson, Donald C., to Forest Engineering Research Institute of Canada. Feller director. 4,281,693, Cl. 144-34.00R.
Mouraret, Michel. Propeller with a water-jet for crafts. 4,281,996, Cl. 440-89.000.
MTU Motoren-und-Turbinen-Union Munchen GmbH: *See—*
Schweikl, Ludwig, 4,281,795, Cl. 239-265.350.
Mueller, George P.; Urban, Urban A.; Muenster, Kermit J.; and Ludwig, Donald A., to Wisconsin Tissue Mills Inc. Wrapping apparatus and method. 4,281,500, Cl. 53-211.000.
Mueller, Richard A., to G. D. Searle & Co. Process for producing α,β-unsaturated ketones. 4,282,158, Cl. 260-347.800.
Muenster, Kermit J.: *See—*
Mueller, George P.; Urban, Urban A.; Muenster, Kermit J.; and Ludwig, Donald A., 4,281,500, Cl. 53-211.000.
Muller, Friedhelm: *See—*
Groll, Manfred; and Muller, Friedhelm, 4,282,000, Cl. 8-527.000.
Muller, Hugo S. Slat conveyor belt for slat conveyors. 4,281,760, Cl. 198-846.000.
Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, to Robert Bosch GmbH. Electrochemical sensor, particularly for oxygen determination in combustion gases. 4,282,080, Cl. 204-195.00S.
Muller, Klaus: *See—*
Kmetz, Allan R.; and Muller, Klaus, 4,281,902, Cl. 350-336.000.
Muller, Martin; Seidel, Albert; Schmidt, Gunther; Schubert-Klempnauer, Holm; Malburg, Werner; and Brand, Rolf A., to Messerschmitt-Bolkow-Blohm GmbH. Method and apparatus for separating particular components of a gas mixture. 4,281,518, Cl. 62-12.000.
Muller, Martin: *See—*
Freitag, Herbert; Schnitzius, Klaus; Muller, Martin; and Schafer, Willi, 4,281,884, Cl. 339-9.00R.
Muller, Wolfgang; and Witzke, Lothar, to Th. Goldschmidt AG. Process for the manufacture of iron and aluminum-free zinc chloride solutions. 4,282,190, Cl. 423-104.000.
Mumford, George V., to Owens-Illinois, Inc. Tamper proof snap cap. 4,281,774, Cl. 220-306.000.
Murai, Kosuke: *See—*
Nagoya, Yoshishige; Murai, Kosuke; Amano, Hirota; and Soga, Yoshisada, 4,282,032, Cl. 75-80.000.
Murakami Kaimeido Co., Ltd.: *See—*
Ochiai, Akio; Iida, Noriyuki; and Yoshimura, Yasumasa, 4,281,898, Cl. 350-281.000.
Muramoto, Makoto; Ishida, Nobuyuki; and Matsushita, Fujio, to Honjo Chemical Corporation, The. Method for producing electrically conductive zinc oxide. 4,282,117, Cl. 252-508.000.
Murphy, Cornelius B.; and Sypula, Donald S., to Xerox Corporation. High speed magnetographic imaging process. 4,282,296, Cl. 430-39.000.
Murphy, Robert P.; and Jones, Frank O., Jr., to Standard Oil Company (Indiana). Minimizing clay and shale damage in a log-inject-log procedure. 4,281,712, Cl. 166-250.000.
Musikas, Claude: *See—*
Fitoussi, Richard; Lours, Sylvie; and Musikas, Claude, 4,282,112, Cl. 252-301.10W.
Muzzarelli, Riccardo, to Anic, S.p.A. Chitosan-glucan complex, method for its production and end uses. 4,282,351, Cl. 536-20.000.
Myers, John F.: *See—*
Hoernschemeyer, August B.; Zinser, Alan L.; and Myers, John F., 4,282,090, Cl. 209-291.000.
Myers, John L., to Ledex, Inc. Bi-directional linear actuator. 4,282,501, Cl. 335-258.000.
Nafziger, John L.: *See—*
Olstowski, Franciszek; and Nafziger, John L., 4,282,387, Cl. 568-618.000.
Nagoya, Yoshishige; Murai, Kosuke; Amano, Hirota; and Soga, Yoshisada, to Pacific Metals Co., Ltd. Direct method for production of high-grade, high-purity ferromanganese. 4,282,032, Cl. 75-80.000.
Nakahara, Yutaka: *See—*
Minagawa, Motonobu; Nakahara, Yutaka; and Kitsukawa, Kazumi, 4,282,141, Cl. 260-45.70R.
Nakai, Kaichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetron with continuous magnetic circuit. 4,282,463, Cl. 315-39.710.
Nakamura, Shiro: *See—*
Sakurai, Mikio; Yoshimoto, Yuichiro; and Nakamura, Shiro, 4,282,061, Cl. 176-20.00R.
Nakamura, Yoshifumi, to Nanbu Industrial Co., Ltd. Toy including a music playing device therein. 4,281,575, Cl. 84-1.280.
Nakanishi, Shizuo: *See—*
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.
Nakano Vinegar Co., Ltd.: *See—*
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,282,257, Cl. 426-17.000.
Namiki, Tomizo: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,282,534, Cl. 346-135.100.
Nanbu Industrial Co., Ltd.: *See—*
Nakamura, Yoshifumi, 4,281,575, Cl. 84-1.280.
National Distillers and Chemical Corp.: *See—*
Donaldson, Charles R.; and Stiles, Claude J., 4,282,339, Cl. 526-64.000.
National Mine Service Company: *See—*
LeBegue, Maurice K.; Keen, Ronald W.; and Keller, Donald E., 4,281,879, Cl. 299-64.000.
NCR Corporation: *See—*
Moore, Harry W., III; and Quack, Steven M., 4,282,572, Cl. 364-200.000.
Neseem, Syed; Blanford, Denis M.; and Amacher, Gene L., 4,282,426, Cl. 235-463.000.
Neale, Abas B. Hydro-flow supra-turbine engine. 4,281,511, Cl. 60-39.530.
Neidleman, Saul L.; and Geigert, John, to Cetus Corporation. Method for producing iodine. 4,282,324, Cl. 435-168.000.
Neiman S.A.: *See—*
Lipschutz, Paul, 4,281,526, Cl. 70-202.000.
Nelson, Eugene E.: *See—*
Kippenhan, Herbert A., Jr.; Nelson, Eugene E.; and Ricker, George T., Jr., 4,282,399, Cl. 178-4.000.
Nelson, John D., to General Electric Company. Method of preparing resinous condensation product of an allylated alkylol phenol and an ethoxyline resin. 4,282,345, Cl. 528-88.000.
Neseem, Syed; Blanford, Denis M.; and Amacher, Gene L., to NCR Corporation. Slot scanning system. 4,282,426, Cl. 235-463.000.
Nestler, Gerhard: *See—*
Merger, Franz; and Nestler, Gerhard, 4,282,368, Cl. 560-24.000.
Merger, Franz; and Nestler, Gerhard, 4,282,370, Cl. 560-25.000.
Neudoerfl, Peter: *See—*
Benda, Rainer; Knoell, Helmuth; Neudoerfl, Peter; and Pennewiss, Horst, 4,282,132, Cl. 260-30.200.
Newman, Charles J., to Grote Manufacturing Company, Inc., The. Shock mounting bracket for lamp bulb. 4,282,566, Cl. 362-369.000.
Newman, Richard A., to J. I. Case Company. Single brake light switch for dual brake pedals. 4,282,509, Cl. 340-69.000.
Newnes, W. R. Vertical sort bin. 4,281,953, Cl. 414-268.000.
Newnham, Robert C.: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,282,453, Cl. 310-335.000.
Nicholas Proprietary Limited: *See—*
Phillips, Glyn O.; Hall, Alan N.; and Hogg, Stephen D., 4,282,204, Cl. 424-49.000.
Nichols, Lawrence J.: *See—*
MacMaster, George H.; and Nichols, Lawrence J., 4,282,491, Cl. 330-286.000.
MacMaster, George H.; and Nichols, Lawrence J., 4,282,492, Cl. 330-286.000.
Nichols, William K. Pellet and chopping machine. 4,281,976, Cl. 425-62.000.
Nicholson, James A. Interior door security. 4,281,865, Cl. 292-258.000.
Nicholson, Robert D., to Koehring Company. Electromagnetic positioner. 4,282,502, Cl. 335-266.000.

Nicko, Reinhard: *See—*
Engelsmann, Dieter; Nicko, Reinhard; Lippl, Leo; and Maas, Dieter, 4,281,911, Cl. 354-173.000.
Nicolson, Alexander M.: *See—*
Chanson, Gary J.; and Nicolson, Alexander M., 4,282,588, Cl. 367-82.000.
Niederdellmann, Georg; Roemer, Norbert; and Grigat, Ernst, to Bayer Aktiengesellschaft. Process for the separation of polyurethane foam hydrolysates into polyol and diamine. 4,282,367, Cl. 260-2.300.
Nierlich, Jean; and Lavoisey, Yves, to Saint-Gobain Industries. Sheet cleaning. 4,281,431, Cl. 15-1.50R.
Nigrin, Jaroslava M., to Corning Glass Works. Lead-free and cadmium-free frits. 4,282,035, Cl. 106-48.000.
Niino, Fusao: *See—*
Fukunaga, Masao; Niino, Fusao; and Nonoguchi, Hiroshi, 4,281,423, Cl. 4-537.000.
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., to International Business Machines Corporation. FET Containing stacked gates. 4,282,540, Cl. 357-23.000.
Ninomiya, Ichiro: *See—*
Tachi, Katsuichi; Ninomiya, Ichiro; and Takayama, Jun, 4,282,552, Cl. 360-70.000.
Ninomiya, Toshiyuki: *See—*
Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, 4,281,753, Cl. 192-99.00S.
Nippon Carbide Kogyo Kabushiki Kaisha: *See—*
Sahara, Masao, 4,282,286, Cl. 428-339.000.
Nippon Chemiphar Co., Ltd.: *See—*
Fujimoto, Yasuo; and Yamabe, Shigeru, 4,282,245, Cl. 424-275.000.
Nippon Electric Co., Ltd.: *See—*
Morishita, Masanobu, 4,282,547, Cl. 358-44.000.
Sakoe, Hiroaki, 4,282,403, Cl. 179-1.0SD.
Shinohara, Tsuneo; and Yonezu, Hiroo, 4,281,891, Cl. 350-96.180.
Taguchi, Tetsu, 4,282,405, Cl. 179-1.0SC.
Yonezu, Hiroo; and Ueno, Masayasu, 4,282,494, Cl. 331-94.50H.
Nippon Kogaku K.K.: *See—*
Maida, Osamu, 4,281,912, Cl. 354-173.000.
Nippon Oil and Fats Co., Ltd.: *See—*
Suzuki, Masao; Matsuo, Takeshi; and Yamada, Naomichi, 4,282,163, Cl. 260-409.000.
Nippon Steel Corporation: *See—*
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.
Nippondenso Co., Ltd.: *See—*
Yoshida, Matuju; and Hayashi, Shukichi, 4,282,574, Cl. 364-431.000.
Nishida, Susumu; Inouye, Tamon; Yoshida, Tadatoki; and Saito, Kiyoto, to Tokyo Shibaura Electric Co., Ltd. Computed tomography apparatus and method using penetrating radiation. 4,282,438, Cl. 250-445.00T.
Nishikatsu, Hiroshi: *See—*
Kobayashi, Yuzi; and Nishikatsu, Hiroshi, 4,281,463, Cl. 33-299.000.
Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayosi; and Yoshida, Tetsuro, to Kyushu Refractories Co., Ltd. Processes for the preparation of fiberous titanic acid metal salts. 4,282,200, Cl. 423-598.000.
Nishimoto, Yoshihiko: *See—*
Atsukawa, Masumi; Nishimoto, Yoshihiko; Yokoyama, Naruo; and Sera, Toshikuni, 4,282,115, Cl. 252-440.000.
Nishino, Atsushi: *See—*
Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, 4,282,480, Cl. 324-61.00R.
Nishizaki, Shinzo: *See—*
Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, 4,282,404, Cl. 179-1.0SM.
Nissan Motor Company Limited: *See—*
Inami, Sumio, 4,281,478, Cl. 49-503.000.
Suga, Masaaki; Kobayashi, Chiaki; and Tohzima, Hisaaki, 4,281,751, Cl. 192-0.092.
Umeno, Yoshihumi, 4,281,446, Cl. 29-432.100.
Yamaguchi, Hiroshi, 4,281,631, Cl. 123-571.000.
Nissen, Peter; Kiene, Wilfried; and Appel, Eggert, to Fischer & Porter Company, Inc. Electromagnetic flowmeter. 4,281,552, Cl. 73-861.120.
Nitschke, John S.: *See—*
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,282,026, Cl. 65-273.000.
Nitschke, Norman C.: *See—*
McMaster, Harold A.; Nitschke, Norman C.; and Nitschke, John S., 4,282,026, Cl. 65-273.000.
Nixon, John M., to Edo-Aire Mitchell. Pitch trim system for aircraft. 4,281,811, Cl. 244-178.000.
Noda, Hideo, to Shimano Industrial Company, Limited. Fishing reel. 4,281,808, Cl. 242-218.000.
Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Light beam scanning system. 4,281,889, Cl. 350-6.800.
Nolan, Daniel A.: *See—*
Lo, Kuang-Hsin K.; and Nolan, Daniel A., 4,282,022, Cl. 65-85.000.
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuichi; and Yagasaki, Toshiaki, to Canon Kabushiki Kaisha. Copying apparatus provided with an automatic original feeding device. 4,281,919, Cl. 355-50.000.
Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Cartridge for purifying exhaust gas. 4,282,186, Cl. 422-180.000.
Nonoguchi, Hiroshi: *See—*
Fukunaga, Masao; Niino, Fusao; and Nonoguchi, Hiroshi, 4,281,423, Cl. 4-537.000.
Norand Corporation: *See—*
Chadima, George E., Jr.; and Laser, Vadim, 4,282,425, Cl. 235-462.000.
Nordwall, Harold L.: *See—*
Lackey, James A.; Nordwall, Harold L.; and Whitney, Charlie B., 4,282,394, Cl. 136-245.000.
Norman, Stanley R. C.; and Tin, Kam B., to GTE Automatic Electric Labs Inc. Noise eliminator circuit. 4,282,488, Cl. 328-112.000.
North American Philips Corporation: *See—*
Erikson, Kenneth R., 4,281,550, Cl. 73-626.000.
Northrop Corporation: *See—*
Reynolds, Christopher I., 4,282,470, Cl. 318-648.000.
Norwood, Donald D. Portable cooler for bottled beverages. 4,281,520, Cl. 62-372.000.
Nothdurft, Heinz: *See—*
Tomasch, Hellmut; Bacher, Robert; Konrath, Karl; Koster, Claus; and Nothdurft, Heinz, 4,281,558, Cl. 74-99.00R.
NOVEX Talalmanyfejleszto es Ertekesito Kulker. Rt.: *See—*
Jeney, Tibor, 4,281,705, Cl. 164-10.000.
Nowak, Robert A., to Motorola Inc. Encapsulated hybrid circuit assembly. 4,282,544, Cl. 357-72.000.
Nozaki, Takao; and Ito, Takashi, to Fujitsu Limited. Method for forming an insulating film layer of silicon oxynitride on a semiconductor substrate surface. 4,282,270, Cl. 427-93.000.
NPI Corporation: *See—*
Baker, Edward D.; and Lang-Ree, Nils, 4,281,594, Cl. 99-386.000.
NTN Toyo Bearing Company, Limited: *See—*
Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.
Nyquist, John D.; Kitko, David J.; and Stradling, Richard F., Jr., to Procter & Gamble Company, The. Passive dosing dispenser with improved hypochlorite cake. 4,281,421, Cl. 4-228.000.
O.M.I. Corporation of America: *See—*
Friedman, S. Jack, 4,281,923, Cl. 356-2.000.
Obenaus, Fritz: *See—*
Droste, Wilhelm; and Obenaus, Fritz, 4,282,389, Cl. 568-697.000.
Ober, David: *See—*
Maxson, Dale E.; and Ober, David, 4,281,592, Cl. 98-38.00R.
Ober, Jurgen: *See—*
Sodler, Walter; Blawert, Dieter; and Ober, Jurgen, 4,281,731, Cl. 177-212.000.
O'Brien, Dennis E.: *See—*
Lundberg, Robert D.; O'Brien, Dennis E.; Makowski, Henry S.; and Klein, Robert R., 4,282,130, Cl. 260-29.6SQ.
O'Brien, Larry S.: *See—*
Bredeweg, Roger L.; O'Brien, Larry S.; and Vallance, Charles B., 4,282,183, Cl. 422-78.000.
Occidental Oil Shale, Inc.: *See—*
Ricketts, Thomas E., 4,281,878, Cl. 299-2.000.
Sass, Allan, 4,281,877, Cl. 299-2.000.
Ochiai, Akio; Iida, Noriyuki; and Yoshimura, Yasumasa, to Murakami Kaimeido Co., Ltd. Automatic antiglare rearview mirror. 4,281,898, Cl. 350-281.000.
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, to Nippon Steel Corporation; and Isolite Insulating Product Company Limited (Isolite Kogyo K.K.). Method for manufacturing refractory material having numerous through pores extending in a certain direction. 4,282,173, Cl. 264-59.000.
O'Connell, Lawrence E.; and Hanisco, Raymond L., to Delbar Products, Inc. Mirror mounting bracket. 4,281,815, Cl. 248-479.000.
Odenwalder, Heinrich: *See—*
Wernicke, Ubbo; Odenwalder, Heinrich; and Sommer, Friedhelm, 4,282,313, Cl. 430-407.000.
Oder, Robin R., to J. M. Huber Corporation. Process for improved magnetic beneficiation of clays. 4,281,799, Cl. 241-24.000.
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, to Hoechst Aktiengesellschaft. α-Amylase inhibitor from a streptomycete and process for its preparation. 4,282,318, Cl. 435-68.000.
Oettli, Walter: *See—*
Zimmermann, Martin R.; and Oettli, Walter, 4,281,465, Cl. 34-26.000.
Office National d'Etudes et de Recherches Aerospatiales: *See—*
Poisson-Quinton, Philippe; Bevert, Amedee P.; and Le Thuy, Hung, 4,281,810, Cl. 244-75.00R.
Officine Minnetti di Ornella Raveggi & C. S.A.S.: *See—*
Minnetti, Federico, 4,281,959, Cl. 414-668.000.
Offshore Company, The: *See—*
Ray, Donald R.; and Steddum, Riddle E., 4,281,613, Cl. 114-230.000.
Oglesby, Frank P.; and Wuster, Walter L., to United States of America, Navy. Method of precision bombing. 4,281,809, Cl. 244-3.160.
Oguro, Tomokatsu. Magnetron. 4,282,459, Cl. 315-39.710.
O'Halloran, Rosemary: *See—*
Deen, Harold E.; Winans, Esther D.; Ryer, Jack; and O'Halloran, Rosemary, 4,282,108, Cl. 252-51.50R.
Ohio State University Research Foundation, The: *See—*
Shore, Sheldon G.; Plotkin, Jeffrey S.; and Alway, Donna G., 4,282,197, Cl. 423-417.000.
Ohta, Sakae; and Tani, Tatsuo, to Kabushiki Kaisha Ricoh. Means for driving a movable body. 4,281,557, Cl. 74-89.220.

Ohta, Shigenori; and Hosoya, Katsuyuki, to Hitachi, Ltd. Fluorescent lamp unit. 4,282,563, Cl. 362-216.000.

Ohta, Takatoshi, to Okamoto Chemical Industry Corporation. Photosensitive diazo coating compositions and plates. 4,282,301, Cl. 430-175.000.

Okada Kogyo Kabushiki Kaisha: *See*—
Okada, Yoshio, 4,281,458, Cl. 30-162.000.

Okada, Wataru: *See*—
Fukuda, Hideki; Shiotani, Takeshi; and Okada, Wataru, 4,282,328, Cl. 435-255.000.

Okada, Yoshio, to Okada Kogyo Kabushiki Kaisha. Compact safety knife. 4,281,458, Cl. 30-162.000.

Okamoto Chemical Industry Corporation: *See*—
Ohta, Takatoshi, 4,282,301, Cl. 430-175.000.

Okamoto, Naomichi: *See*—
Yamada, Ryozo; Okamoto, Naomichi; and Meiri, Toshimi, 4,281,893, Cl. 350-96.310.

Okazaki, Gosei: *See*—
Koshishiba, Soichi; and Okazaki, Gosei, 4,281,499, Cl. 53-445.000.

Okui, Tokujiro. Both-surface adhesive tape producing apparatus. 4,282,056, Cl. 156-519.000.

Okumura, Hajime: *See*—
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,282,257, Cl. 426-17.000.

Okuno, Yoshitaka: *See*—
Wada, Norinobu; and Okuno, Yoshitaka, 4,282,348, Cl. 528-500.000.

Olazabal, Romualdo. Lighter apparatus for use with cigarette packages or cases therefor. 4,281,761, Cl. 206-87.000.

Olin Corporation: *See*—
Larson, Harold V., 4,282,192, Cl. 423-166.000.
Rothgery, Eugene F.; and Katz, Lawrence E., 4,282,169, Cl. 260-455.00A.
Rothgery, Eugene F., 4,282,371, Cl. 560-35.000.

Olson, Esther E.: *See*—
Barber, Donald T.; Pfeffer, George B.; and Olson, Esther E., 4,281,445, Cl. 29-426.500.

Olstowski, Franciszek; and Nafziger, John L., to Dow Chemical Company, The. Process for preparing polyols. 4,282,387, Cl. 568-618.000.

Olympia Werke AG: *See*—
Fortmann, Hermann, 4,281,918, Cl. 355-3.00R.

Olympus Optical Co., Ltd.: *See*—
Hashimoto, Akihiko, 4,281,837, Cl. 277-12.000.
Kinoshita, Kunio, 4,281,646, Cl. 128-6.000.
Kitagawa, Masahiro; and Saito, Michiharu, 4,281,917, Cl. 354-289.000.
Takayama, Syuichi, 4,281,910, Cl. 354-62.000.
Tanaka, Masahiro; and Konoshima, Katunaga, 4,281,674, Cl. 134-95.000.

Omron Tateisi Electronics Co.: *See*—
Hatten, Hideaki; Onji, Norio; Tsujino, Koichi; and Fukuyama, Toshifumi, 4,282,430, Cl. 250-221.000.

Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Derivatives of thiazolidinecarboxylic acids and related acids. 4,282,235, Cl. 424-270.000.

Onji, Norio: *See*—
Hatten, Hideaki; Onji, Norio; Tsujino, Koichi; and Fukuyama, Toshifumi, 4,282,430, Cl. 250-221.000.

Onken, Reiner; Mansfeld, Gunter; and Tersteegen, Johannes, to Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt. Electro-hydraulic regulating drive and a fast-switching magnetic valve for use therein. 4,281,584, Cl. 91-1.000.

O'Rear, Dennis J.; and Mayer, Jerome F., to Chevron Research Company. Petroleum distillate upgrading process. 4,282,085, Cl. 208-120.000.

Ortopedia GmbH: *See*—
Knobel, Fritz; and Kuhn, Gerhard, 4,281,747, Cl. 192-8.00C.

Osawa, Masanori: *See*—
Ito, Akira; Sasaki, Heizo; Osawa, Masanori; Kouno, Masahiro; and Iwata, Kenji, 4,282,114, Cl. 252-429.00B.

Osawa Precision Industries, Ltd.: *See*—
Ishibashi, Takao; and Osonoi, Kenjiro, 4,281,909, Cl. 352-25.000.

Osburn, Carlton M.: *See*—
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., 4,282,540, Cl. 357-23.000.

Oskam, Aane A., to Industrie Koot B.V. Adjusting device for motorcar mirrors. 4,281,899, Cl. 350-289.000.

Osonoi, Kenjiro: *See*—
Ishibashi, Takao; and Osonoi, Kenjiro, 4,281,909, Cl. 352-25.000.

Outboard Marine Corporation: *See*—
Fuelling, William, Jr.; and Seyerle, Carl E., 4,281,505, Cl. 56-12.700.

Overman, David L., to United States of America, Army. Non-slip turning joint for fuzes. 4,281,601, Cl. 102-276.000.

Owens-Corning Fiberglas Corporation: *See*—
Dunn, Charles S.; and Propster, Mark A., 4,282,019, Cl. 65-27.000.
Froberg, Magnus L., 4,282,018, Cl. 65-27.000.
Williamson, Michael, 4,282,393, Cl. 13-6.000.

Owens-Illinois, Inc.: *See*—
Adamski, Richard T.; and Kowal, Samuel J., 4,281,758, Cl. 198-398.000.
Doherty, Thomas E.; and Herzog, William F., 4,281,979, Cl. 425-391.000.
Mumford, George V., 4,281,774, Cl. 220-306.000.
Rapp, James E., 4,282,282, Cl. 428-220.000.

Pace, Joseph A. Two-piece hardshell, soluble and digestible liquid containing gelatin capsule. 4,281,763, Cl. 206-530.000.

Pacific Metals Co., Ltd.: *See*—
Nagoya, Yoshishige; Murai, Kosuke; Amano, Hirota; and Soga, Yoshisada, 4,282,032, Cl. 75-80.000.

Pacini, August J.; and Halley, James L. Anticarcinogen additive for water supplies. 4,282,104, Cl. 210-754.000.

Package Machinery Company: *See*—
Farrell, Robert E., 4,281,977, Cl. 425-149.000.
Farrell, Robert E., 4,282,176, Cl. 264-328.130.

Pagel, Werner: *See*—
Roth, Mario; Pagel, Werner; and Schmidt, Gunther, 4,282,025, Cl. 65-273.000.

Palen, Nelson J.: *See*—
Hake, Kenneth A.; and Palen, Nelson J., 4,281,719, Cl. 172-710.000.

Palitex Project Company GmbH: *See*—
Frentzel-Beyme, Johannes, 4,281,508, Cl. 57-279.000.

Palombo, Gaston A.: *See*—
Hunter, Gerald D.; and Palombo, Gaston A., 4,282,428, Cl. 250-214.00R.

Pampouchidis, Georgios; and Honig, Helmut, to Vianova Kunstharz, A.G. Thermosetting binders for cathodic deposition in electrodeposition paints. 4,282,128, Cl. 260-29.2TN.

PanCanadian Petroleum Limited: *See*—
Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.

Pansini, Andrew L. Automatic pool cleaners. 4,281,995, Cl. 440-38.000.

Panzer, Hans P.: *See*—
Goodman, Richard M.; and Panzer, Hans P., 4,282,087, Cl. 209-5.000.

Pao, Peter Y.: *See*—
Martin, Walter H.; Briley, George C.; and Pao, Peter Y., 4,281,521, Cl. 62-380.000.

Papageorgiou, Vassilios P. Remedy for skin injuries and diseases. 4,282,250, Cl. 424-311.000.

Papantoniou, Christos: *See*—
Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; Mahieu, Claude; and Zorayan, Vahan, 4,282,203, Cl. 424-47.000.

Para-Press S.A.: *See*—
Resibois, Raymond, 4,281,488, Cl. 52-173.00R.

Paradis, Stephen G.: *See*—
Franklin, Frederick C.; and Paradis, Stephen G., 4,282,013, Cl. 55-48.000.

Pardon, David W.: *See*—
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,282,453, Cl. 310-335.000.

Parker, Frank; and Parker, Leslie M. Granulator with false bottom collection chamber. 4,281,801, Cl. 241-222.000.

Parker, Leslie M.: *See*—
Parker, Frank; and Parker, Leslie M., 4,281,801, Cl. 241-222.000.

Paschen, Rolf; and Martens, Rolf, to Koh-I-Noor Rapidgoraph, Inc. Process and apparatus for automatic drafting devices. 4,282,536, Cl. 346-140.00R.

Pasour, John A.: *See*—
Kapetanakos, Christos A.; Pasour, John A.; Mahaffey, Redge A.; Golden, Jeffry; and Marsh, Spencer J., 4,282,436, Cl. 250-423.00R.

Passerell, David P.: *See*—
Volgstadt, Frank R.; and Passerell, David P., 4,282,175, Cl. 264-248.000.

Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH: *See*—
Hagemann, Josef, 4,282,395, Cl. 174-50.610.

Patterson, Raymond B., III, to Harris Corporation. Analog to digital encoding system with an encoder structure incorporating instrumentation amplifier, sample and hold, offset correction and gain correction functions. 4,282,515, Cl. 340-347.0CC.

Pauwels, Michael A.; and Bauer, Dan O., to Pneumo Corporation. Linear variable phase transformer with constant magnitude output. 4,282,485, Cl. 324-208.000.

Payne, F. Leland; and Taylor, Jeffrey L., to Burr-Brown Research Corporation. System for linearizing non-linear transducer signals. 4,282,578, Cl. 364-573.000.

Payne, Robert L.: *See*—
Haglund, Stephen A.; and Payne, Robert L., 4,282,519, Cl. 340-628.000.

Payne, Thomas R.; and Baker, Alfred L., to General Electric Company. Power control for appliance using multiple high inrush current elements. 4,282,422, Cl. 219-486.000.

Pedrazzoli, Andrea; and Boveri, Sergio, to CM Industries. 5-(2-Hydroxy-3-thiopropoxy) chromone-2-carboxylic acids chemical process and pharmaceutical compositions. 4,282,247, Cl. 424-283.000.

Peil, William; and McFadyen, Robert J., to General Electric Company. Arc lamp lighting unit with means to prevent prolonged application of starting potentials. 4,282,462, Cl. 315-46.000.

Pellicori, Samuel F.; and Monnier, Milton H., to United States of America, Air Force. High absorption coating. 4,282,290, Cl. 428-472.000.

Pelousek, Herbert: *See*—
Kohler, Armin; Hoffmann, Peter; Pelousek, Herbert; and Specht, Eduard, 4,282,137, Cl. 260-40.00P.

Penn, William D.: *See*—
Evetts, Samuel G.; Lawson, John D.; and Penn, William D., 4,282,589, Cl. 367-90.000.

Pennewiss, Horst: *See*—
Benda, Rainer; Knoell, Helmuth; Neudoerfl, Peter; and Pennewiss, Horst, 4,282,132, Cl. 260-30.200.

Pennwalt Corporation: *See*—
Davidson, Thomas A.; and Griffith, Ronald C., 4,282,146, Cl. 260-239.0BB.
Moore, Brian, 4,281,504, Cl. 56-10.300.
Pentith, Gerald R. O., to Pitcraft Summit Limited. Conveyors. 4,281,759, Cl. 198-725.000.
Perdent, GmbH: *See*—
Michl, Rudy; and Wollwage, Peter, 4,281,991, Cl. 433-202.000.
Perepezko, John H.: *See*—
Smith, Jeffery S.; Perepezko, John H.; Rasmussen, Don H.; and Loper, Carl R., Jr., 4,282,034, Cl. 75-232.000.
Perfection Corporation: *See*—
Volgstadt, Frank R.; and Passerell, David P., 4,282,175, Cl. 264-248.000.
Perkin-Elmer Corporation, The: *See*—
Guha, Jayanta K., 4,281,894, Cl. 350-162.00R.
Person, Abraham: *See*—
McNary, James F.; and Person, Abraham, 4,281,614, Cl. 114-264.000.
Persson, Stig, to Aktiebolaget SKF. Seal. 4,281,838, Cl. 277-53.000.
Peterson, James O.: *See*—
Hunt, Earl R.; Rosler, Robert K.; and Peterson, James O., 4,282,136, Cl. 260-38.000.
Petitpierre, Jean C., to Ciba-Geigy Corporation. Pressure-sensitive or heat-sensitive recording material and novel 2,2-diarylchromeno compounds used therein. 4,281,855, Cl. 282-27.500.
Petrini, Richard R.: *See*—
Lord, David E.; Petrini, Richard R.; and Carter, Gary W., 4,281,929, Cl. 356-241.000.
Petro-Canada Exploration Inc.: *See*—
Fuhr, Bryan J.; and Liu, Joseph K., 4,282,103, Cl. 210-709.000.
Petters, Claus, to Messerschmitt-Bolkow-Blohm GmbH. Warning and signalling device, especially for maritime purposes. 4,281,427, Cl. 9-9.000.
Pfaff, Werner: *See*—
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,282,318, Cl. 435-68.000.
Pfeffer, George B.: *See*—
Barber, Donald T.; Pfeffer, George B.; and Olson, Esther E., 4,281,445, Cl. 29-426.500.
Pfeffer, Henry A.: *See*—
Guiliano, Basil A.; Pfeffer, Henry A.; and Kurtz, Andrew D., 4,282,359, Cl. 544-192.000.
Pfefferle, Donald H.: *See*—
Audesse, Emery G.; Brower, Boyd G.; Pfefferle, Donald H.; and Holmes, James L., 4,282,559, Cl. 362-15.000.
Pfizer Inc.: *See*—
Holland, Gerald F., 4,282,242, Cl. 424-274.000.
Holland, Gerald F., 4,282,246, Cl. 424-275.000.
Sarsas, Reinhard, 4,282,229, Cl. 424-258.000.
Wernau, William C., 4,282,321, Cl. 435-104.000.
PH Thermal Products Limited: *See*—
Lupton, Donald B.; and Lawrence, Kenneth, 4,282,053, Cl. 156-264.000.
Phillips, Barry A.; Spitler, Keith G.; and Keegan, Richard E., to Mobay Chemical Corporation. Polyols derived from 4,4,4-trichloro-1,2-epoxybutane and/or epihalohydrin for use in the production of heat sealable foams. 4,282,332, Cl. 521-171.000.
Phillips, Glyn O.; Hall, Alan N.; and Hogg, Stephen D., to Nicholas Proprietary Limited. Anti-caries preparations. 4,282,204, Cl. 424-49.000.
Phillips Petroleum Co.: *See*—
Goins, Robert R., 4,281,776, Cl. 222-132.000.
Mills, King L., 4,281,512, Cl. 60-311.000.
Stewart, William S.; and Spurgeon, Virgil R., 4,281,970, Cl. 417-53.000.
Tieszen, Dale O.; and Scoggins, Lacey E., 4,282,347, Cl. 528-388.000.
Wu, Yulin, 4,282,382, Cl. 568-570.000.
Phillips, Stephen R. Automatic print wheel element changing mechanism for a serial printer. 4,281,938, Cl. 400-171.000.
Pickands Mather & Co.: *See*—
Thomas, Wallace N., 4,281,746, Cl. 192-3.00R.
Pickrell, John W. Container handling mechanism for trash collecting vehicles. 4,281,956, Cl. 414-409.000.
Pierburg GmbH & Co. KG: *See*—
Kuhlen, Ernst; and Frohberg, Gunther, 4,281,586, Cl. 91-52.000.
Pierce, Danny A., to IPM Corporation. Accelerated corrosion test apparatus. 4,282,181, Cl. 422-53.000.
Pike, Andrew J.: *See*—
Lavagnino, Edward R.; Pike, Andrew J.; and Campbell, Jack B., 4,282,170, Cl. 260-465.00D.
Pilgrim Engineering Development Ltd.: *See*—
Bunyan, Thomas W., 4,281,580, Cl. 411-548.000.
Pitcraft Summit Limited: *See*—
Pentith, Gerald R. O., 4,281,759, Cl. 198-725.000.
Pitt, William V. Atmospheric resistant doors. 4,281,493, Cl. 52-309.110.
Place, Donald E., to Therm-O-Disc, Incorporated. Fan coolant thermostats. 4,282,505, Cl. 337-365.000.
Plan-Shell Oy: *See*—
Heikinheimo, Olli, 4,281,695, Cl. 144-312.000.
Platt, James L., Jr., to Chevron Research Company. Poly-(alpha-alkoxy)acrylamide and poly-(alpha-alkoxy)acrylamide complexes. 4,282,343, Cl. 525-336.000.
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Tri/penta/aza-tetracyclo-dodeca/enes/dienes or diecaenes. 4,282,027, Cl. 71-76.000.
Plessey Handel und Investments AG: *See*—
Hulbert, Anthony P., 4,282,497, Cl. 332-19.000.
Plotkin, Jeffrey S.: *See*—
Shore, Sheldon G.; Plotkin, Jeffrey S.; and Alway, Donna G., 4,282,197, Cl. 423-417.000.
Plummer, William T., to Polaroid Corporation. Method and apparatus for measuring and/or setting lens focus distance. 4,282,548, Cl. 358-107.000.
Pneumo Corporation: *See*—
Pauwels, Michael A.; and Bauer, Dan O., 4,282,485, Cl. 324-208.000.
Poirier, Charles H.: *See*—
Latassa, Frank M.; Bienvenue, Roland L.; Poirier, Charles H.; and Wallace, John, 4,282,455, Cl. 313-177.000.
Poisson-Quinton, Philippe; Bevert, Amedee P.; and Le Thuy, Hung, to Office National d'Etudes et de Recherches Aerospatiales. Process and an installation for the control of the efficiency of the aerodynamic surfaces of an aircraft. 4,281,810, Cl. 244-75.00R.
Polaroid Corporation: *See*—
Bruder, Alan H., 4,282,307, Cl. 430-232.000.
Foley, James W., 4,282,160, Cl. 260-388.000.
Kaplan, Jonathan I., 4,281,886, Cl. 339-97.00R.
Lambert, Ronald F., 4,282,306, Cl. 430-218.000.
Plummer, William T., 4,282,548, Cl. 358-107.000.
Poletto, John F.: *See*—
Bernstein, Seymour; and Poletto, John F., 4,282,375, Cl. 562-427.000.
Pollock, Stephen F.; and Benedict, Charles E., to Wayne H. Coloney Company, Inc. Ammunition supply system. 4,281,583, Cl. 89-33.0BB.
Poly-Glas Systems: *See*—
Hetherington, Robert D.; and Goelz, David W., 4,281,683, Cl. 137-606.000.
Polythetics, Inc.: *See*—
Colpitts, Ralph W.; and Wendt, Jens H., 4,281,992, Cl. 433-212.000.
Pontin, Stephen B.: *See*—
Citrone, Anthony M.; and Pontin, Stephen B., 4,282,109, Cl. 252-102.000.
Pope, William H. Hose everting method and apparatus therefor. 4,281,781, Cl. 223-39.000.
Portaframe, Inc.: *See*—
Covington, Fred D., 4,281,532, Cl. 72-457.000.
Porter, Harold F.: *See*—
Buehler, Oscar R.; and Porter, Harold F., 4,282,381, Cl. 564-498.000.
Ports, Kenneth A.; and St. Clair, Thomas R., to Harris Corporation. Method for qualifying biased burn-in integrated circuits on a wafer level. 4,281,449, Cl. 29-593.000.
Postovalov, Valdis E.: *See*—
Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and Schelev, Mikhail Y., 4,282,427, Cl. 250-213.0VT.
Potter Electric Signal Company: *See*—
Wilson, Stanley, Jr.; and Borger, Robert M., 4,282,517, Cl. 340-503.000.
Power, Delwin L.: *See*—
Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., 4,282,597, Cl. 368-280.000.
Power Engineering and Manufacturing, Ltd.: *See*—
Herscovici, Saul, 4,281,560, Cl. 74-414.000.
PPG Industries, Inc.: *See*—
Du Bois, Donald W., 4,282,074, Cl. 204-98.000.
Hammel, Joseph J.; and Mackenzie, John D., 4,282,023, Cl. 65-134.000.
Hoekje, Howard H., 4,282,195, Cl. 423-289.000.
Rinehart, Jay K., 4,282,168, Cl. 260-455.00A.
President Shizuoka University: *See*—
Yamada, Ryozo; Okamoto, Naomichi; and Meiri, Toshimi, 4,281,893, Cl. 350-96.310.
Preslar, Donald R.: *See*—
Beelitz, Howard R.; and Preslar, Donald R., 4,282,538, Cl. 357-15.000.
Presto Lock Company, Division of Walter Kidde & Co., Inc.: *See*—
Bako, Lazlo, 4,281,525, Cl. 70-71.000.
Priam: *See*—
Ho, Bin L.; and Bibby, Stephen, 4,282,554, Cl. 360-97.000.
Price, Lawrence: *See*—
Mattor, John A.; and Price, Lawrence, 4,282,054, Cl. 156-289.000.
Priest, David C., to Union Carbide Corporation. Polyurethane foam prepared from a copolymer/polyol composition. 4,282,331, Cl. 521-137.000.
Priestley, Eldon B.; and Call, Patrick J., to RCA Corporation. Method of depositing a silicon oxide dielectric layer. 4,282,268, Cl. 427-39.000.
Pringle, Robert D. Physical fitness indicator. 4,281,663, Cl. 128-689.000.
PRO SAC S.p.A.: *See*—
Ferretti, Romeo, 4,282,125, Cl. 260-22.0CB.
Probsteder, Josef. Means for feeding solid combustible waste material to a furnace. 4,281,603, Cl. 110-196.000.
Procter & Gamble Company, The: *See*—
Flora, Lawrence; and Francis, Marion D., 4,282,214, Cl. 424-204.000.
Logan, Ted J.; and King, Richard M., 4,282,164, Cl. 260-428.500.

Nyquist, John D.; Kitko, David J.; and Stradling, Richard F., Jr., 4,281,421, Cl. 4-228.000.
Prodell, Rita C., to Akzona Incorporated. Sensitized sheep stroma immunoassay for rheumatoid factor. 4,282,002, Cl. 23-230.00B.
Prokhorov, Alexandr M.: *See—*
Brjukhnevich, Gennady I.; Klepov, Anatoly F.; Kondrashova, Lidia I.; Lozovoi, Valery I.; Miller, Viktor A.; Postovalov, Valdis E.; Prokhorov, Alexandr M.; Serdjuchenko, Jury N.; Stepanov, Boris M.; and Schelev, Mikhail Y., 4,282,427, Cl. 250-213.0VT.
Propster, Mark A.: *See—*
Dunn, Charles S.; and Propster, Mark A., 4,282,019, Cl. 65-27.000.
Prussin, Samuel: *See—*
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,207, Cl. 424-78.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,208, Cl. 424-78.000.
Puls, Hans: *See—*
Finsterwalder, Ulrich; Finsterwalder, Klemens; Koch, Kurt; and Puls, Hans, 4,282,036, Cl. 106-97.000.
Purdue Research Foundation: *See—*
Faile, Samuel P., 4,282,057, Cl. 156-614.000.
Pure, Albert, to Insinger Machine Company. Apparatus for washing insulated trays. 4,281,675, Cl. 134-125.000.
Purex Corporation: *See—*
Schoenmeyr, Ivar L., 4,281,839, Cl. 277-93.0SD.
Quack, Steven M.: *See—*
Moore, Harry W., III; and Quack, Steven M., 4,282,572, Cl. 364-200.000.
Quantor Corporation: *See—*
Mohr, Siegfried H., 4,281,895, Cl. 350-257.000.
Quinby, Ripley, Jr. Jump rope. 4,281,832, Cl. 272-75.000.
Quinlisk, Warren, to L. B. White Company, Inc. Climate control for an animal barn. 4,281,789, Cl. 236-44.00C.
Quinn, Clayton B.; and Wilson, Charles A., II, to General Electric Company. Continuous process for producing halogenated diphenols. 4,282,391, Cl. 568-726.000.
Qwint Systems Inc.: *See—*
Budniak, Mitchell S.; and Martin, Donald P., 4,282,471, Cl. 318-685.000.
Martin, Donald P., 4,282,472, Cl. 318-696.000.
Raab, Simon. Bone connective prostheses adapted to maximize strength and durability of prostheses-bone cement interface; and methods of forming same. 4,281,420, Cl. 3-1.912.
Radelow, Wolfgang: *See—*
Forberg, Horst; and Radelow, Wolfgang, 4,281,885, Cl. 339-14.00R.
Rademacher, Christian: *See—*
Bucker, Werner; and Rademacher, Christian, 4,282,273, Cl. 427-398.300.
Radler, Richard W.: *See—*
Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 4,282,298, Cl. 430-58.000.
Raffel, Bernard D.; and Bowyer, John M., to Goodyear Aerospace Corporation. Electrical signal interconnection coupler. 4,282,508, Cl. 340-52.00R.
Raible, Donald A., to Bentley Laboratories, Inc. Blood oxygenator. 4,282,180, Cl. 422-46.000.
Raines, Raymond. Animal feeder for flowable materials. 4,281,624, Cl. 119-52.00R.
Rainville Company Inc.: *See—*
Rainville, Dewey, 4,281,770, Cl. 215-100.00A.
Rainville, Dewey, to Rainville Company Inc. Blow molded container with separate handle. 4,281,770, Cl. 215-100.00A.
Raksis, Joseph W.: *See—*
Sy, Anita O.; and Raksis, Joseph W., 4,282,167, Cl. 260-453.00P.
Ramage, Robert: *See—*
Guest, Angela W.; Taylor, Andrew W.; and Ramage, Robert, 4,282,373, Cl. 560-181.000.
Rambert, Andre: *See—*
Bousquet, Gilles; Egraz, Jean-Bernard; Rambert, Andre; and Ravet, Georges, 4,282,140, Cl. 260-42.520.
Ramer, James L. Method for deep shaft pumpback energy generation. 4,282,444, Cl. 290-52.000.
Rana, Virendra V. S.: *See—*
Copley, Stephen M.; Rana, Virendra V. S.; and Whelan, James M., 4,282,024, Cl. 65-144.000.
Randall, Bruce. Faucet connector. 4,281,857, Cl. 285-34.000.
Rapp, James E., to Owens-Illinois, Inc. Barium aluminosilicate glasses, glass-ceramics and dopant. 4,282,282, Cl. 428-220.000.
Rasmussen, Don H.: *See—*
Smith, Jeffery S.; Perepezko, John H.; Rasmussen, Don H.; and Loper, Carl R., Jr., 4,282,034, Cl. 75-232.000.
Rasner, James W. Jewelry clasp. 4,281,441, Cl. 24-230.00R.
Rau, Peter: *See—*
Hensolt, Theodor; and Rau, Peter, 4,282,065, Cl. 176-78.000.
Rauhut, Michael M.: *See—*
Tseng, Shin-Shyong; and Rauhut, Michael M., 4,282,357, Cl. 544-85.000.
Ravelet, Robert: *See—*
Berthet, Michel; Kermarrec, Jean-Claude; and Ravelet, Robert, 4,281,516, Cl. 62-3.000.
Ravet, Georges: *See—*
Bousquet, Gilles; Egraz, Jean-Bernard; Rambert, Andre; and Ravet, Georges, 4,282,140, Cl. 260-42.520.
Ray, Donald R.; and Steddum, Riddle E., to Offshore Company, The. Method of and apparatus for mooring a floating structure. 4,281,613, Cl. 114-230.000.
Raychem Corporation: *See—*
Siedenburg, Juergen; and Fritsche, Joel L., 4,282,397, Cl. 174-92.000.
Raychem Pontoise S.A.: *See—*
Watine, Didier J. M. M.; Hine, Jean P. M.; Catabelle, Jean M. H.; and Delamotte, Jean C. C., 4,282,396, Cl. 174-84.00R.
Raymond, Glendon A.: *See—*
Spath, Herbert J.; and Raymond, Glendon A., 4,281,519, Cl. 62-79.000.
Raytheon Company: *See—*
Harper, Robert, 4,282,457, Cl. 315-3.600.
MacMaster, George H.; and Nichols, Lawrence J., 4,282,491, Cl. 330-286.000.
MacMaster, George H.; and Nichols, Lawrence J., 4,282,492, Cl. 330-286.000.
Raz, Zeev. Hand shower and temperature indicating unit. 4,281,543, Cl. 73-343.00R.
RCA Corporation: *See—*
Ahmed, Adel A. A., 4,282,477, Cl. 323-312.000.
Balaban, Alvin R.; and Steckler, Steven A., 4,282,549, Cl. 358-150.000.
Balberg, Isaac, 4,282,537, Cl. 357-6.000.
Beelitz, Howard R.; and Preslar, Donald R., 4,282,538, Cl. 357-15.000.
Carroll, Charles B.; Schaller, Frederick C.; and Beres, Ernest A., 4,281,816, Cl. 249-82.000.
Dinardo, Joseph R., Jr., 4,282,311, Cl. 430-318.000.
Fisher, Albert W., 4,282,266, Cl. 427-9.000.
Heuner, Robert C., 4,282,496, Cl. 331-116.0FE.
Ipri, Alfred C., 4,282,556, Cl. 361-56.000.
Leidich, Arthur J., 4,282,478, Cl. 323-316.000.
Luz, David W.; and Willis, Donald H., 4,282,460, Cl. 315-411.000.
Priestley, Eldon B.; and Call, Patrick J., 4,282,268, Cl. 427-39.000.
Reitmeier, Glenn A., 4,282,546, Cl. 358-22.000.
Simon, Paul B.; and Barbin, Robert L., 4,282,461, Cl. 315-398.000.
Southgate, Peter D., 4,282,510, Cl. 340-146.30F.
Southgate, Peter D.; and Crooks, Horatio N., 4,282,511, Cl. 340-146.30F.
Tults, Juri, 4,282,516, Cl. 340-365.00S.
Reavill, Joseph A., to General Dynamics, Pomona Division. Uniform plasma etching system. 4,282,077, Cl. 204-192.00E.
Rebelo, Lucilio A.: *See—*
Yashin, Michael A.; and Rebelo, Lucilio A., 4,282,003, Cl. 29-619.000.
Reckitt & Colman Products Limited: *See—*
Citrone, Anthony M.; and Pontin, Stephen B., 4,282,109, Cl. 252-102.000.
Red Devil, Inc.: *See—*
Schotter, Richard D.; and Heinis, Robert P., 4,281,936, Cl. 366-209.000.
Redman, Howard E., to Mathewson Corporation. Coil transfer apparatus. 4,281,961, Cl. 414-751.000.
Reeves, James W.; Sylvester, Robert W.; and Wells, David F., to Du Pont de Nemours, E. I., and Company. Chlorine and iron oxide from ferric chloride - apparatus. 4,282,185, Cl. 422-142.000.
Refrigeration Engineering Corporation: *See—*
Martin, Walter H.; Briley, George C.; and Pao, Peter Y., 4,281,521, Cl. 62-380.000.
Regan, Michael T.: *See—*
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukeinen, Joseph Y., 4,282,354, Cl. 542-441.000.
Regie Nationale des Usines Renault: *See—*
LeVeux, Bernard, 4,281,853, Cl. 280-804.000.
Regitz, Gunter: *See—*
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Regitz, Gunter, 4,282,239, Cl. 424-274.000.
Rehbein, Erwin G., to Mill-Craft Housing Corp. Log roll article. 4,281,830, Cl. 272-1.00E.
Reiser, Wolf: *See—*
Draber, Wilfried; Reiser, Wolf; Schmidt, Thomas; Eue, Ludwig; and Schmidt, Robert R., 4,282,388, Cl. 568-660.000.
Reitmeier, Glenn A., to RCA Corporation. Television image size altering apparatus. 4,282,546, Cl. 358-22.000.
Reliance Electric Company: *See—*
Lower, Jerry L., 4,281,565, Cl. 74-789.000.
Remy, Lee E.: *See—*
Weiss, William R.; and Remy, Lee E., 4,281,740, Cl. 181-250.000.
Republic Steel Corporation: *See—*
Daus, Ronald R., 4,281,479, Cl. 49-503.000.
Research Corporation: *See—*
Agrawal, Krishna C., 4,282,232, Cl. 424-267.000.
Research Products Corporation: *See—*
Delany, John J., 4,281,638, Cl. 126-428.000.
Resibois, Raymond, to Para-Press S.A. Multipane window with adjustable light admission. 4,281,488, Cl. 52-173.00R.
Reum, Donald J.: *See—*
Emalfarb, Mark A.; Emalfarb, Sy; and Reum, Donald J., 4,281,473, Cl. 47-33.000.
Reuter, Peter; Blechschmitt, Kurt; and Wirth, Friedrich, to BASF Aktiengesellschaft. Supported catalyst containing vanadium and titanium and/or zirconium for the preparation of phthalic anhydride. 4,282,116, Cl. 252-461.000.

Rexnord Inc.: *See*—
Rooney, Thomas C., 4,282,102, Cl. 210-616.000.

Reynolds, Christopher I., to Northrop Corporation. Close loop control apparatus and method for a force rebalance transducer. 4,282,470, Cl. 318-648.000.

Reynolds Metals Company: *See*—
Bird, Robert D.; and Vance, Harry R., 4,282,191, Cl. 423-119.000.
Bullough, Vaughn L., 4,282,039, Cl. 106-278.000.

Rhau, Siegfried: *See*—
Weber, Adolf; and Rhau, Siegfried, 4,281,599, Cl. 102-364.000.

Rhee, Gwang H. Loose-leaf binder. 4,281,940, Cl. 402-38.000.

Ribera, John F.; Schaefer, Walter R.; and Seibel, Robert R., to Bell Telephone Laboratories, Incorporated. Signaling unit for interchange of data with multipoint line selection units and data terminals. 4,282,400, Cl. 178-73.000.

Ricchio, Pasquale: *See*—
Chandick, Michael D.; Chandick, Robert M.; and Ricchio, Pasquale, 4,281,849, Cl. 280-655.000.

Richards Manufacturing Company, Inc.: *See*—
Treace, Harry T., 4,281,419, Cl. 3-1.900.

Richter Gedeon Vegyeszeti Gyar Rt: *See*—
Takacs, Istvan; Bosits, Gyula; Vereczkey, Endre; and Kerey, Gyorgy, 4,282,101, Cl. 210-403.000.

Richter, Gerhard; and Weidlich, Erhard, to Siemens Aktiengesellschaft. Implantable carbon electrode. 4,281,668, Cl. 128-784.000.

Ricker, George T., Jr.: *See*—
Kippenhan, Herbert A., Jr.; Nelson, Eugene E.; and Ricker, George T., Jr., 4,282,399, Cl. 178-4.000.

Ricketts, Thomas E., to Occidental Oil Shale, Inc. Method for loading explosive laterally from a borehole. 4,281,878, Cl. 299-2.000.

Ridenour, Ralph G. Tubing joint assembly. 4,281,862, Cl. 285-382.200.

Rieber, Norbert: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,282,027, Cl. 71-76.000.

Rieger, Franz: *See*—
Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, 4,282,080, Cl. 204-195.00S.

Rieken, William C.: *See*—
Franzen, Roger W.; Greber, Gerald; and Rieken, William C., 4,282,254, Cl. 426-2.000.

Rinehart, Dixie L.: *See*—
Giese, Erik O.; Rinehart, Dixie L.; and Gross, Alexander L., 4,281,468, Cl. 36-121.000.

Rinehart, Jay K., to PPG Industries, Inc. S-(Substituted phenyl) N-alkyl thiolcarbamates. 4,282,168, Cl. 260-455.00A.

Rip 'n Rap, Inc.: *See*—
Strickland, Robert D., 4,282,279, Cl. 428-101.000.

Ripert, Roger L., to Grove Valve and Regulator Company. Swing check valve construction. 4,281,680, Cl. 137-527.400.

Ritchey, Eugene B. Tool for attaching identification device. 4,281,657, Cl. 128-330.000.

Robe, T. Richard, to University of Kentucky Research Foundation, The. Trailer hitch. 4,281,847, Cl. 280-446.00B.

Robert Bosch GmbH: *See*—
Alf, Reinhard; and Klinkwitz, Kurt, 4,282,526, Cl. 343-715.000.
Bruhmann, Werner; Schwartz, Reinhard; and Hummel, Darsten, 4,281,630, Cl. 123-373.000.
Maurer, Franz, 4,281,567, Cl. 74-866.000.
Muller, Klaus; Linder, Ernst; Mauer, Helmut; Friese, Karl-Hermann; Rieger, Franz; and Geier, Heinz, 4,282,080, Cl. 204-195.00S.
Tomasch, Hellmut; Bacher, Robert; Konrath, Karl; Koster, Claus; and Nothdurft, Heinz, 4,281,558, Cl. 74-99.00R.

Robertson, King G.; and McAuliffe, Donald C., to Coors Container Company. Method of recycling aluminum scrap into sheet material for aluminum containers. 4,282,044, Cl. 148-2.000.

Roche Medical Electronics Inc.: *See*—
Farrar, Alfred O.; and Hochberg, Howard M., 4,281,659, Cl. 128-635.000.

Rochlin, Morris. Floatation pads for life-saving vests. 4,281,428, Cl. 9-342.000.

Rockcor, Inc.: *See*—
Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, 4,281,621, Cl. 118-500.000.

Rocket of London Limited: *See*—
Atkins, Colin A., 4,281,656, Cl. 128-325.000.

Rockwell-Rimoldi S.p.A.: *See*—
Torre, Giancarlo D., 4,281,607, Cl. 112-130.000.

Rodenstock Instruments Corp.: *See*—
Cornsweet, Tom N., 4,281,926, Cl. 356-124.000.

Rodgers, Stephen D.; and Appleman, Bernard R., to United States of America, Navy. Polyisobutylene rubber antifouling paint. 4,282,126, Cl. 260-27.00R.

Roe, Nathaniel R. Letter scale. 4,281,461, Cl. 33-138.000.

Roemer, Norbert: *See*—
Niederdellmann, Georg; Roemer, Norbert; and Grigat, Ernst, 4,282,367, Cl. 260-2.300.

Rogers, Charles D.: *See*—
Acker, Frank E.; and Rogers, Charles D., 4,282,465, Cl. 318-139.000.

Rogers, Charlie C., III: *See*—
Shipp, John I.; and Rogers, Charlie C., III, 4,282,520, Cl. 340-629.000.

Rogers, M. Maurice. Inflatable condom. 4,281,648, Cl. 128-79.000.

Roggero, Arnaldo; and Gandini, Alberto, to Anic S.p.A. Process for preparing graft polymers of α,α'-disubstituted-β-propiolactones on isobutylene-triene-copolymers. 4,282,337, Cl. 525-153.000.

Roggero, Arnaldo; and Zotteri, Luciano, to Anic S.p.A. Process for the preparation of grafted polymers of α-substituted-β-propiolactone on amorphous base polymers. 4,282,338, Cl. 525-153.000.

Rohm GmbH: *See*—
Benda, Rainer; Knoell, Helmuth; Neudoerfl, Peter; and Pennewiss, Horst, 4,282,132, Cl. 260-30.200.

Rohr, Wolfgang: *See*—
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,282,369, Cl. 560-25.000.

Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., to Merck & Co., Inc. Dibenz[b,e]oxepin compounds. 4,282,365, Cl. 548-252.000.

Rolls-Royce Limited: *See*—
Cork, Frank, 4,282,041, Cl. 134-3.000.

Roltra S.p.A.: *See*—
Brusasco, Enzo, 4,281,566, Cl. 74-800.000.

Roman, Steven A.; and Soloway, Samuel B., to Shell Oil Company. Oxyimino-substituted (1R, cis)-cyclopropanecarboxylate pesticides. 4,282,249, Cl. 424-304.000.

Rooney, Clarence S.: *See*—
Rokach, Joshua; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,282,365, Cl. 548-252.000.

Rooney, Thomas C., to Rexnord Inc. Activated sludge wastewater treatment having suspended inert media for biota growth. 4,282,102, Cl. 210-616.000.

Rosaen, Borje O. Fluid flow meter. 4,281,554, Cl. 73-861.710.

Rosenberry, George M., Jr.: *See*—
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,281,706, Cl. 164-463.000.

Rosenbusch, Kurt; and Schlingmann, Merten, to Hoechst Aktiengesellschaft. Process for the greasing of leather and fur skins. 4,281,997, Cl. 8-94.10P.

Rosler, Robert K.: *See*—
Hunt, Earl R.; Rosler, Robert K.; and Peterson, James O., 4,282,136, Cl. 260-38.000.

Ross, William C., to W. R. Grace & Co. Run-flat vehicle tire. 4,281,700, Cl. 152-158.000.

Ross, William C., to W. R. Grace & Co. Vehicle tire having run flat insert. 4,281,701, Cl. 152-158.000.

Rossi, Louis J.: *See*—
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukeinen, Joseph Y., 4,282,354, Cl. 542-441.000.

Roth, Jonathan N. Pectin culture media and method. 4,282,317, Cl. 435-34.000.

Roth, Mario; Pagel, Werner; and Schmidt, Gunther, to Saint Gobain Industries. Carriage for transporting sheets of glass and for placing them in a press for imparting a convex shape. 4,282,025, Cl. 65-273.000.

Rothbuhr, Lothar; Sroka, Werner; and Fritz, Walter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of high quality carbon black. 4,282,198, Cl. 423-445.000.

Rothgery, Eugene F.; and Katz, Lawrence E., to Olin Corporation. Selected 2-acyl- or 2-thioacyl-1-trichloroacetimidoylhydrazines and their use as fungicides. 4,282,169, Cl. 260-455.00A.

Rothgery, Eugene F., to Olin Corporation. Selected aminoester derivatives of trichloroacetonitrile. 4,282,371, Cl. 560-35.000.

Rottenkolber, Paul, to Volkswagenwerk Aktiengesellschaft. Device for high thermal stress connection between a part made of a ceramic material and a part made of a metallic material. 4,281,941, Cl. 403-29.000.

Rovee, D. Thomas; Marvel, John R.; and Mezick, James A., to Johnson & Johnson. Topical anti-inflammatory drug therapy. 4,282,216, Cl. 424-240.000.

Rowley, Larry W.: *See*—
McJunkin Jr., Howard P.; and Rowley, Larry W., 4,282,564, Cl. 362-217.000.

Rubenstein, Kenneth E.; and Ullman, Edwin F., to Syva Company. Enzyme bound corticosteroids. 4,282,325, Cl. 435-188.000.

Rubenstein, Roger H.: *See*—
Glover, Douglas L.; Rubenstein, Roger H.; Douglas, Peter H.; and Bridges, Lee R., 4,281,989, Cl. 433-130.000.

Rudd, Peter W.: *See*—
Tindall, Richard F.; Baddeley, Eric R.; and Rudd, Peter W., 4,282,507, Cl. 338-25.000.

Rumold, Gerhard: *See*—
Winkler, Heinrich; Rumold, Gerhard; and Schummer, Helmut, 4,282,014, Cl. 55-105.000.

Rump, Bjorn S., to Sublistatic Holding S.A. Wide width printing process. 4,281,598, Cl. 101-470.000.

Runk, Robert H.: *See*—
Edelman, Leonard E.; and Runk, Robert H., 4,282,122, Cl. 260-18.0EP.

Runk, Terry M., to Longyear Company. Knuckle joint spearhead core drilling apparatus. 4,281,725, Cl. 175-246.000.

Runkle, Dean E.; Tang, Louis S.; and Harrison, Gregory K., to Bendix Corporation, The. Hydraulic brake booster and valve member. 4,281,585, Cl. 91-5.000.

Rushforth, Roy W. E.: *See*—
Chase, Barry J.; Rushforth, Roy W. E.; and Selman, Gordon J., 4,282,174, Cl. 264-111.000.

Russel, Andrew L., Jr.: *See—*
Barker, Thomas; Russel, Andrew L., Jr.; Bricault, Gary; and Van Wieren, Albert L., 4,282,468, Cl. 318-608.000.

Russell, John X., to Babcock & Wilcox Company, The. Automatic broach machine loader. 4,281,960, Cl. 414-750.000.

Rutter, Harold T., to Sunnen Products Company. Spindle nose for machine tools. 4,281,482, Cl. 51-168.000.

Rutter, Jerry L.; and Ahle, James L., to Gulf Oil Corporation. Substituted thiosemicarbazides, their manufacture and use as plant growth regulants. 4,282,031, Cl. 71-99.000.

Ryan, Kenneth M.: *See—*
Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,282,148, Cl. 260-239.00A.

Rydell, Adam Z. Finger mounting apparatus for loading grid. 4,281,501, Cl. 53-248.000.

Ryer, Jack: *See—*
Deen, Harold E.; Winans, Esther D.; Ryer, Jack; and O'Halloran, Rosemary, 4,282,108, Cl. 252-51.50R.

S&C Electric Company: *See—*
Tobin, Thomas J., 4,282,504, Cl. 337-186.000.

S.U.B. Societa Utilizzazione Brevetti S.R.L.: *See—*
Cisterni, Leandro, 4,282,120, Cl. 260-17.40R.

Sach, George S.: *See—*
Durant, Graham J.; Ganellin, Charon R.; and Sach, George S., 4,282,224, Cl. 424-250.000.

Sachuk, Nicholas E.: *See—*
Kringel, George N.; and Sachuk, Nicholas E., 4,282,560, Cl. 362-26.000.

Saeki, Takeo: *See—*
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.

Safronov, Vladimir G.: *See—*
Lobachev, Viktor A.; Safronov, Vladimir G.; Danilova, Faina B.; and Lvov, Vladimir N., 4,282,012, Cl. 51-309.000.

Sahara, Masao, to Nippon Carbide Kogyo Kabushiki Kaisha. Process for making destructible marking film and method for marking. 4,282,286, Cl. 428-339.000.

Saiki, Goro: *See—*
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.

St. Clair, Thomas R.: *See—*
Ports, Kenneth A.; and St. Clair, Thomas R., 4,281,449, Cl. 29-593.000.

Saint-Gobain Industries: *See—*
Nierlich, Jean; and Lavoisey, Yves, 4,281,431, Cl. 15-1.50R.
Roth, Mario; Pagel, Werner; and Schmidt, Gunther, 4,282,025, Cl. 65-273.000.

Saint, Joseph D. Air spoiler. 4,281,869, Cl. 296-1.00S.

St. Louis Conveyor Company Inc.: *See—*
Hoernschemeyer, August B.; Zinser, Alan L.; and Myers, John F., 4,282,090, Cl. 209-291.000.

Saito, Kiyoto: *See—*
Nishida, Susumu; Inouye, Tamon; Yoshida, Tadatoki; and Saito, Kiyoto, 4,282,438, Cl. 250-445.00T.

Saito, Michiharu: *See—*
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Saito, Toshitaro: *See—*
Ochiai, Tsunemi; Saiki, Goro; Shimao, Teruo; Saito, Toshitaro; Nakanishi, Shizuo; and Saeki, Takeo, 4,282,173, Cl. 264-59.000.

Sakoe, Hiroaki, to Nippon Electric Co., Ltd. Pattern recognition with a warping function decided for each reference pattern by the use of feature vector components of a few channels. 4,282,403, Cl. 179-1.0SD.

Sakurai, Mikio; Yoshimoto, Yuichiro; and Nakamura, Shiro, to Hitachi, Ltd. System for preventing erroneous operation of control rods. 4,282,061, Cl. 176-20.00R.

Sakurai, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Ventilator of distributor for ignition of engine. 4,281,627, Cl. 123-146.50A.

Salina, Salvatore C.: *See—*
Corbett, Marshall J.; and Salina, Salvatore C., 4,282,187, Cl. 422-190.000.

Salvador, Louis A.: *See—*
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Salzmann, Theodor: *See—*
Dreiseitl, Walter; Kollensperger, Dieter; Salzmann, Theodor; Schlegel, Thomas; and Weigel, Wolf-Dieter, 4,282,473, Cl. 318-803.000.

Samel, Ulf-Rainer: *See—*
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,282,027, Cl. 71-76.000.

Sandifer, James R.: *See—*
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Sandine, William E.; and Ayres, James W., to State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University. Method and starter compositions for the growth of acid producing bacteria and bacterial compositions produced thereby. 4,282,255, Cl. 426-7.000.

Sandler, Michael E.; and Aiani, Richard L., to Sound Games, Inc. Audio racquet ball. 4,281,833, Cl. 273-85.00G.

Sandoz Ltd.: *See—*
Berney, Daniel, 4,282,251, Cl. 424-316.000.

Sandvik Aktiebolag: *See—*
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Sanko Steamship Co., Ltd., The: *See—*
Kunishio, Misao; Shirai, Kenshi; and Takezi, Hiroyuki, 4,282,100, Cl. 210-384.000.

Sansui Electric Company: *See—*
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Sarantakis, Dimitrios, to American Home Products Corporation. Octapeptides lowering growth hormone. 4,282,143, Cl. 260-112.50S.

Sarsas, Reinhard, to Pfizer Inc. Hydantoin derivatives as therapeutic agents. 4,282,229, Cl. 424-258.000.

Sartorius GmbH: *See—*
Sodler, Walter; Blawert, Dieter; and Ober, Jurgen, 4,281,731, Cl. 177-212.000.

Sasaki, Atsuo: *See—*
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Sasaki, Heizo: *See—*
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Sasaki, Yukio: *See—*
Sugio, Akitoshi; Masu, Masanobu; Sasaki, Yukio; and Mizutani, Zenpei, 4,282,335, Cl. 525-68.000.

Sass, Allan, to Occidental Oil Shale, Inc. Rock bolting techniques for forming an in situ oil shale retort. 4,281,877, Cl. 299-2.000.

Sato, Kuniaki: *See—*
Kobayashi, Zenjiro; Aihara, Masaki; and Sato, Kuniaki, 4,281,984, Cl. 432-9.000.

Sato, Masaharu; and Sugiura, Michio, to Kensen Co., Ltd. Body warmer for heating by exothermic heat. 4,282,005, Cl. 44-3.00R.

Sato, Tetsuo, to Hitachi, Ltd. Synthesizer tuner. 4,282,603, Cl. 455-183.000.

Satoh, Yuji, to Diesel Kiki Co., Ltd. Proportional control type remote-control direction switching control valve device. 4,281,682, Cl. 137-596.170.

Satterlee, Jesse D. Device for sensing overheating of bearings. 4,282,506, Cl. 337-380.000.

Sattler, Michael: *See—*
Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,281,823, Cl. 266-246.000.

Sauerbrunn, Robert D.: *See—*
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Sauter, Roland: *See—*
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Savich, Peter P., to Smyth Manufacturing Company, The. Integrated book lining. 4,281,854, Cl. 281-21.00R.

Saxon, George E., to Condenser Cleaners Mfg. Co., Inc. Tube cleaner. 4,281,432, Cl. 15-104.06R.

Say, Geoffrey R.; Hays, James R., Sr.; Iyengar, Jagannathan N.; and Hacker, Barbara A., to Exxon Research & Engineering Co. Process for converting cyclic urea to corresponding diamine in a gas treating system. 4,282,194, Cl. 423-223.000.

Scapa Dryers (Canada) Ltd.: *See—*
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Scarborough, Irvin R.: *See—*
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Scarola, Leonard S.: *See—*
Kurtz, Stuart J.; Blakeslee, Theodore R., III; and Scarola, Leonard S., 4,282,177, Cl. 264-564.000.

Schaaf, Cecil F.; and Schaaf, Craig R. Traction aid device. 4,281,791, Cl. 238-14.000.

Schaaf, Craig R.: *See—*
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Schaap, Luke A.; Udelhofen, John H.; and Harris, Samuel W., to Standard Oil Company (Indiana). Low viscosity oils. 4,282,106, Cl. 252-32.70E.

Schaefer, Walter R.: *See—*
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Schafer, Willi: *See—*
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Schaller, Frederick C.: *See—*
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Schelev, Mikhail Y.: *See—*
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Schering Corporation: *See—*
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Wright, John J., 4,282,350, Cl. 536-10.000.

Scheuermann, Albert; and Adickes, Henning, to Deere & Company. Silencer for exhaust gases. 4,281,742, Cl. 181-257.000.

Schick, George: *See—*
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Schierberg, Gordon R.: *See—*
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Schimko, Reinhold, to Universal Maschinenfabrik Dr. Rudolf Schieber GmbH & Co. KG. Electrically controlled selecting device for the needles of a flat knitting machine. 4,281,523, Cl. 66-232.000.
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, to BASF Aktiengesellschaft. Diurethanes. 4,282,369, Cl. 560-25.000.
Schlegel, Thomas: *See—*
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Schluntz, Roy A.; and Stemniski, John R., to Charles Stark Draper Laboratory, Inc., The. Molded inertial sensor. 4,281,555, Cl. 74-5.00R.
Schmidt, Delf: *See—*
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Schmidt, Thomas: *See—*
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Schmidt, William K.: *See—*
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Schmitt, Frederick L.: *See—*
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Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,282,205, Cl. 424-49.000.
Schneider, Ronald A., to Chevron Research Company. Monoolefinic plasticized sulfur. 4,282,040, Cl. 106-287.320.
Schnitzius, Klaus: *See—*
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Schock & Co.: *See—*
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Schock, Karl; and Frank, Lothar, to Schock & Co. Sectional construction strip, e.g. for the production of window frames. 4,281,492, Cl. 52-309.900.
Schoenmeyr, Ivar L., to Purex Corporation. Rotary face sealing apparatus. 4,281,839, Cl. 277-93.0SD.
Scholz, Hans-Joachim: *See—*
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Schonert, Ernest A. Modular wall framing. 4,281,491, Cl. 52-281.000.
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Schotter, Richard D.; and Heinis, Robert P., to Red Devil, Inc. Paint mixing and conditioning machine. 4,281,936, Cl. 366-209.000.
Schrader, Lothar, to Siemens Aktiengesellschaft. Field effect transistor with decreased substrate control of the channel width. 4,282,539, Cl. 357-23.000.
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Schroeder, Daniel R., to Motorola, Inc. Channel signal detection circuit for scanning receivers. 4,282,602, Cl. 455-169.000.
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Schwarz, Robert: *See—*
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Schweikl, Ludwig, to MTU Motoren-und-Turbinen-Union Munchen GmbH. Jet pipe arrangement for aircraft propulsion and control. 4,281,795, Cl. 239-265.350.
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Barbelet, Michel; Caujolle, Jean-Pierre; Scramoncin, Claude; and Thibault, Edmond, 4,282,072, Cl. 204-1.00T.
Seaman, Gary G., to Western Electric Company, Inc. Apparatus for testing leads of fuse holders. 4,281,888, Cl. 339-151.00B.
Seay, Nicholas J., to Midwest Silo Company. Silo unloading chute. 4,281,754, Cl. 193-34.000.
Sedco, Inc.: *See—*
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Sendoykas, Jack J. Compound tool. 4,281,433, Cl. 15-105.000.
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Gauthier, John A.; and Shaver, David M., 4,282,410, Cl. 179-84.00R.
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Shendale Ltd.: *See—*
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Shepard, John S. Dispensing valve. 4,281,779, Cl. 222-501.000.
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Shibuya Kogyo Co., Ltd.: *See*—
Koshishiba, Soichi; and Okazaki, Gosei, 4,281,499, Cl. 53-445.000.
Shigematsu, Shozo, to Kabushiki Gaisha Mitokako. Surface coating device of core body. 4,281,978, Cl. 425-376.00B.
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Noda, Hideo, 4,281,808, Cl. 242-218.000.
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Wada, Norinobu; and Okuno, Yoshitaka, 4,282,348, Cl. 528-500.000.
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Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,282,148, Cl. 260-239.00A.
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Siefert, Roland; and Sauter, Roland, to Kienzle Uhrenfabriken GmbH. Alarm clock case shut-off device. 4,282,596, Cl. 368-262.000.
Siegel, Craig S. Child-resistant/non-child-resistant closure. 4,281,771, Cl. 215-220.000.
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Dreiseitl, Walter; Kollensperger, Dieter; Salzmann, Theodor; Schlegel, Thomas; and Weigel, Wolf-Dieter, 4,282,473, Cl. 318-803.000.
Franke, Kurt, 4,282,432, Cl. 250-322.000.
Hassler, Dieter; and Schwarz, Robert, 4,282,452, Cl. 310-317.000.
Kern, Hans; and Lichti, Reiner, 4,282,535, Cl. 346-140.00R.
Richter, Gerhard; and Weidlich, Erhard, 4,281,668, Cl. 128-784.000.
Schrader, Lothar, 4,282,539, Cl. 357-23.000.
Wentzel, Peter; and Eiting, Hermann, 4,282,553, Cl. 360-75.000.
Wiechert, Edelbert, 4,281,864, Cl. 292-229.000.
Winkler, Heinrich; Rumold, Gerhard; and Schummer, Helmut, 4,282,014, Cl. 55-105.000.
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Silverman, Daniel. Method for monitoring the recovery of minerals from shallow geological formations. 4,282,587, Cl. 367-37.000.
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Wood, Milton D.; and Silverman, Daniel, 4,281,713, Cl. 166-251.000.
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Wallman, Irwin, 4,281,542, Cl. 73-304.00C.
Simon, Paul B.; and Barbin, Robert L., to RCA Corporation. Television raster centering aid. 4,282,461, Cl. 315-398.000.
Simonelli, Louis R. Swimming pool winterizing disconnect unit. 4,281,422, Cl. 4-496.000.
Simonich, Walter: *See*—
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Simons, John R.; and Fenske, John W., to Grunau Company, Inc. Liquid flow indicator. 4,282,413, Cl. 200-81.90M.
Singer Company, The: *See*—
Dell, Harold R.; Holtsman, William L.; Lamasney, Michael V.; and Mortimer, Charles P. L., 4,281,994, Cl. 434-49.000.
Ljung, Bo H. G., 4,282,495, Cl. 331-94.50S.
Marsh, Walter H. W.; and Brienza, Michael J., 4,281,782, Cl. 223-102.000.
Zocher, Josef, 4,281,609, Cl. 112-184.000.
Singer, Richard A.; and Welton, Gerry D., to Berkshire Furniture Co., Inc. Bed frame. 4,281,424, Cl. 5-282.00R.
Sinkkonen, Matti S. Roller assembly for refuse crushers. 4,281,945, Cl. 404-121.000.
Sisson, Albert E.; and Lewis, Donald J., to Bendix Corporation, The. Single solenoid unit injector. 4,281,792, Cl. 239-5.000.
Sitabkhan, Mansur N., to International Telephone and Telegraph Corporation. Fiber optic connector. 4,281,892, Cl. 350-96.210.
SKG Industries, Inc.: *See*—
Ferri, Joseph E.; Gundersen, Allan A.; and Seelig, Oliver N., 4,281,937, Cl. 366-303.000.
Skogen, John D.: *See*—
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SKW Trostberg Aktiengesellschaft: *See*—
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Slater Steel Industries, Limited: *See*—
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Liu, Thomas M. H.; Melillo, David G.; Ryan, Kenneth M.; Shinkai, Ichiro; and Sletzinger, Meyer, 4,282,148, Cl. 260-239.00A.
Sloan, Cephas H., to Eastman Kodak Company. Solvent-resistant alkylated melamine cross-linked cellulose ester articles. 4,281,998, Cl. 8-129.000.
Sloma, Greg T. Apparatus and method for converting a full-time four-wheel drive transfer case for part-time operation. 4,281,735, Cl. 180-247.000.
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Enkner, Bernhard; Berger, Rupert; Eysn, Manfred; Haslehner, Hermann; Smejkal, Helmut; and Sattler, Michael, 4,281,823, Cl. 266-246.000.
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Garrett, William R., 4,281,724, Cl. 175-195.000.
Garrett, William R., 4,281,726, Cl. 175-321.000.
Smith, Jeffery S.; Perepezko, John H.; Rasmussen, Don H.; and Loper, Carl R., Jr., to Wisconsin Alumni Research Foundation. Amorphous metal structures and method. 4,282,034, Cl. 75-232.000.
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Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,282,213, Cl. 424-200.000.
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,282,221, Cl. 424-249.000.
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Smith, Paul R.: *See*—
Brooks, Kenneth; Smith, Paul R.; and Morris, Thomas E., 4,282,533, Cl. 346-75.000.
Smith, Robert L.; and Lee, Ta-jyh, to Merck & Co., Inc. Antihypercholesterolemic compounds. 4,282,155, Cl. 260-343.500.
Smith, Stuart B. Thermal insulation packet. 4,282,276, Cl. 428-35.000.
Smith, William G., to Belden Corporation. Wire stripper. 4,281,444, Cl. 29-426.500.
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Brenner, L. Martin, 4,282,227, Cl. 424-256.000.
Smyth Manufacturing Company, The: *See*—
Savich, Peter P., 4,281,854, Cl. 281-21.00R.
Sneyers, Hendrik H.: *See*—
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Societe d'Assistance Technique Pour Produits Nestle S.A.: *See*—
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Societe d'Exploitation des Procedes Coatex: *See*—
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Societe Nationale Industrielle Aerospatiale: *See—*
Duret, Maurice L.; Lamarche, Bernard L. J.; Declercq, Marc A.; and Martin, Robert D., 4,281,966, Cl. 416-134.00A.
Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., 4,281,967, Cl. 416-145.000.

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Gaudriot, Lionel; and Mercusot, Michel, 4,281,551, Cl. 73-647.000.

Sodler, Walter; Blawert, Dieter; and Ober, Jurgen, to Sartorius GmbH. Electromagnetic force-compensating precision weigher with dither. 4,281,731, Cl. 177-212.000.

Soga, Yoshisada: *See—*
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Solar Bar-B-Que Corporation: *See—*
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Solomon, John H. Anti-holiday cable armor. 4,282,398, Cl. 174-106.00R.

Soloway, Samuel B.: *See—*
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Sommers, Philip B. Assay tube rack. 4,281,768, Cl. 211-74.000.

Sony Corporation: *See—*
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Uzuka, Mitsuo, 4,282,464, Cl. 318-138.000.

Sorensen, Ralph T. Door. 4,281,704, Cl. 160-340.000.

Sound Games, Inc.: *See—*
Sandler, Michael E.; and Aiani, Richard L., 4,281,833, Cl. 273-85.00G.

Southgate, Peter D., to RCA Corporation. Apparatus for discerning the noticeable presence of spatial fluctuations of intensity within a two-dimensional visual field. 4,282,510, Cl. 340-146.30F.

Southgate, Peter D.; and Crooks, Horatio N., to RCA Corporation. Apparatus for discerning the noticeable presence of spatial fluctuations of intensity within a two-dimensional visual field. 4,282,511, Cl. 340-146.30F.

Sowers, Dennis A.: *See—*
Lee, Roland E.; Berger, Alfred G.; Sowers, Dennis A.; Sergeant, Richard J.; and Behrens, Hermann W., 4,281,540, Cl. 73-147.000.

Spadoni-Censi, Vittorio. Apparatus for opening and closing a door. 4,281,475, Cl. 49-28.000.

Spar Aerospace Limited: *See—*
Groskopfs, Ernest, 4,281,561, Cl. 74-471.0XY.

Spath, Herbert J.; and Raymond, Glendon A., to Carrier Corporation. Refrigeration circuit heat reclaim method and apparatus. 4,281,519, Cl. 62-79.000.

Specht, Eduard: *See—*
Kohler, Armin; Hoffmann, Peter; Pelousek, Herbert; and Specht, Eduard, 4,282,137, Cl. 260-40.00P.

Speicher, John M., to General Dynamics, Pomona Division. Differential drive rolling arc gimbal. 4,282,529, Cl. 343-765.000.

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Spence, Gavin G.: *See—*
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Sperry Corporation: *See—*
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Chanson, Gary J.; and Nicolson, Alexander M., 4,282,588, Cl. 367-82.000.
Harvey, William A.; and Torok, Ernest J., 4,281,905, Cl. 350-377.000.

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Wong, Wilson T., 4,282,582, Cl. 364-748.000.

Spiegelberg, Hans, to Cederroths AB. Hermetically sealed compress medical dressing. 4,281,650, Cl. 128-156.000.

Spiegelberg, William D.; Moracz, Donald J.; and Lake, Frank N., to TRW Inc. Process for isothermally shaping a titanium-containing metal workpiece. 4,281,528, Cl. 72-46.000.

Spitler, Keith G.: *See—*
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Sportoletti, Giancarlo: *See—*
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Sprague Electric Company: *See—*
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Sprague, Michael J.: *See—*
Engelbach, Heinz; and Sprague, Michael J., 4,282,374, Cl. 568-471.000.

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Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2,4,6-Trimethylcyclohexanemethanol and derivatives, process for preparing same and organoleptic uses thereof. 4,282,205, Cl. 424-49.000.

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SRO-Kugellagerwerke J. Schmid-Roost AG: *See—*
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Sroka, Werner: *See—*
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Freitag, Herbert; Schnitzius, Klaus; Muller, Martin; and Schafer, Willi, 4,281,884, Cl. 339-9.00R.

Stachel, Earl F.: *See—*
McDonald, James A.; and Stachel, Earl F., 4,281,828, Cl. 493-12.000.

Staiger, Gerhard: *See—*
Klaerner, Peter; Staiger, Gerhard; and Bronstert, Klaus, 4,282,341, Cl. 526-124.000.

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Standard Oil Company (Indiana): *See—*
Hall, Johnce E., 4,281,716, Cl. 166-339.000.
Murphy, Robert P.; and Jones, Frank O., Jr., 4,281,712, Cl. 166-250.000.
Schaap, Luke A.; Udelhofen, John H.; and Harris, Samuel W., 4,282,106, Cl. 252-32.70E.

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Feldman, Daniel W., 4,281,981, Cl. 425-467.000.

Star-Kist Foods, Inc.: *See—*
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State of Oregon, by and through the Oregon State Board of Higher Education on behalf of Oregon State University: *See—*
Sandine, William E.; and Ayres, James W., 4,282,255, Cl. 426-7.000.

Stauers, Olgerts, to Western Electric Company, Inc. On-hook/off-hook detector circuit. 4,282,408, Cl. 179-18.0FA.

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Felix, Raymond A., 4,282,231, Cl. 424-263.000.

Stearns, Stanley D. Flow control means for use in an adaptor assembly. 4,281,679, Cl. 137-515.500.

Steck, Edgar A., to United States of America, Army. Topical prophylaxis against schistosomiasis. 4,282,253, Cl. 424-330.000.

Steckler, Steven A.: *See—*
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Steddum, Riddle E.: *See—*
Ray, Donald R.; and Steddum, Riddle E., 4,281,613, Cl. 114-230.000.

Steimmig, Anna: *See—*
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Stein, Dieter: *See—*
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Steinberg, Hyman A. Solar collector construction. 4,281,642, Cl. 126-447.000.

Stellner, Klaus: *See—*
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Stemniski, John R.: *See—*
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Stepanov, Boris M.: *See—*
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Stephens, Albert E.: *See—*
Mee, David K.; and Stephens, Albert E., 4,281,985, Cl. 432-205.000.

Stern, Frank, to Westinghouse Canada Limited. Mono-energetic neutron void meter. 4,282,435, Cl. 250-390.000.

Stetson, Earl W., to General Electric Company. Surge voltage arrester housing having a fragible section. 4,282,557, Cl. 361-117.000.

Stewart, Duncan: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,282,453, Cl. 310-335.000.

Stewart, Hudson: *See—*
Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, 4,281,621, Cl. 118-500.000.

Stewart, Jimmy L., to General Battery Corporation. Open and short circuit test method. 4,282,292, Cl. 429-93.000.

Stewart, Robert C., to Tellabs, Inc. Residual echo suppressor for echo canceller. 4,282,411, Cl. 179-170.200.

Stewart, William S.; and Spurgeon, Virgil R., to Phillips Petroleum Company. Turbo-expander control. 4,281,970, Cl. 417-53.000.

Stiefel, Kenneth E., to Bell Telephone Laboratories, Incorporated. Telephone loop resistance detector. 4,282,407, Cl. 179-18.0FA.

Stiefel, Max; and Wolfbeiss, Erich, to Babcock-Brown Boveri Reaktor GmbH. Procedure and equipment for injecting gas into liquids. 4,282,062, Cl. 176-37.000.

Stiles, Claude J.: *See—*
Donaldson, Charles R.; and Stiles, Claude J., 4,282,339, Cl. 526-64.000.

Stjernholm, Dale T. Cantilever mounted wind turbine. 4,281,965, Cl. 416-227.00A.

Stoll, Kurt. Working cylinder for pneumatic or hydraulic pressure media. 4,281,589, Cl. 92-109.000.

Stone, Samuel E.: *See—*
Gaiser, Robert F.; and Stone, Samuel E., 4,281,880, Cl. 303-6.00C.

Stonebanks, Trevor J.: *See—*
Jackman, Thomas R.; and Stonebanks, Trevor J., 4,281,844, Cl. 280-87.010.

Stoneleigh Trust, The: *See—*
Massa, Frank, 4,281,484, Cl. 51-413.000.

Storek, Jaroslav: *See—*
Didek, Stanislav; Fajt, Ludvik; Storek, Jaroslav; Andres, Jiri; Cada, Frantisek; and Markova, Marie, 4,281,507, Cl. 57-58.890.

Stork, Gilbert: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.

Stovall, Marvin S. Saw guide for angle cuts. 4,281,572, Cl. 83-745.000.

Stradling, Richard F., Jr.: *See—*
Nyquist, John D.; Kitko, David J.; and Stradling, Richard F., Jr., 4,281,421, Cl. 4-228.000.

Strand, Albert T.: *See—*
Cramer, Gregory D.; King, Irvin B.; Sauerbrunn, Robert D.; and Strand, Albert T., 4,281,935, Cl. 366-174.000.

Streit, Kenneth F., to Techplastics, Inc. Key coupled plastic conduits. 4,281,860, Cl. 285-137.00R.

Strengowski, Stanley S., to Textron, Inc. Gas meter with composite iron center casting. 4,281,541, Cl. 73-264.000.

Strickland, Robert D., to Rip 'n Rap, Inc. Formable removable insulating enclosure for a container. 4,282,279, Cl. 428-101.000.

Strissel, Richard A.: *See—*
Khan, Sultan W.; Ham, John K.; and Strissel, Richard A., 4,282,583, Cl. 364-900.000.

Strode, James P.: *See—*
Litman, Alan L.; and Strode, James P., 4,281,856, Cl. 285-15.000.

Struger, Odo J.: *See—*
Brown, Ronald A.; Hu, Sung C.; and Struger, Odo J., 4,282,584, Cl. 364-900.000.

Stuber, Fred A.: *See—*
Dai, Sheng-Hong A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,282,383, Cl. 568-573.000.

Studer, Frank G. Anti-sway apparatus. 4,281,850, Cl. 280-689.000.

Stull, Morton. Locking closure cap. 4,281,778, Cl. 222-153.000.

Sublistatic Holding S.A.: *See—*
Rump, Bjorn S., 4,281,598, Cl. 101-470.000.

Suda, Seijo: *See—*
Imai, Masumi; Hirasawa, Kotaro; Suda, Seijo; and Kawamoto, Yukio, 4,282,573, Cl. 364-431.000.

Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Nonnenmann, Manfred; Hesse, Wolfgang; Haller, Klaus; and Bardong, Helmut, 4,282,186, Cl. 422-180.000.

Suen, Kwai W.: *See—*
Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; Suen, Kwai W.; and Van Doorn, Anton J., 4,282,119, Cl. 260-6.000.

Suga, Masaaki; Kobayashi, Chiaki; and Tohzima, Hisaaki, to Nissan Motor Company, Limited. Automatic gear shifting method. 4,281,751, Cl. 192-0.092.

Sugio, Akitoshi; Masu, Masanobu; and Matunaga, Masatugu, to Mitsubishi Gas Chemical Company, Inc. Fiber-reinforced resin composition containing polyphenylene ether resin. 4,282,139, Cl. 260-42.170.

Sugio, Akitoshi; Masu, Masanobu; Sasaki, Yukio; and Mizutani, Zenpei, to Mitsubishi Gas Chemical Company, Inc. High molecular resin composition. 4,282,335, Cl. 525-68.000.

Sugiura, Michio: *See—*
Sato, Masaharu; and Sugiura, Michio, 4,282,005, Cl. 44-3.00R.

Sullivan, Donald B.: *See—*
Zimmerman, James E.; and Sullivan, Donald B., 4,281,517, Cl. 62-6.000.

Sullivan, Lawrence G., to Crosrol Limited. Apparatus for cleaning the surface of a rotating roller. 4,281,434, Cl. 15-256.510.

Sulzer Brothers Limited: *See—*
Bosshard, Ernst, 4,281,954, Cl. 414-287.000.

Suma, Miki: *See—*
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Suma, Miki, 4,282,288, Cl. 428-408.000.

Sumitomo Chemical Company, Limited: *See—*
Matsuo, Takashi; and Tsushima, Kazunori, 4,282,372, Cl. 560-121.000.

Sumitomo Metal Mining Co., Ltd.: *See—*
Kawazoe, Masayuki; Tomoda, Yasuro; Sasaki, Atsuo; and Kaneko, Isao, 4,281,821, Cl. 266-44.000.

Summers, Christopher P.; and Thompson, Donald G., to U.S. Philips Corporation. Signal buffer circuit arrangement. 4,282,447, Cl. 307-255.000.

Summers, Tommy L.: *See—*
Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., 4,282,597, Cl. 368-280.000.

Sun Oil Company of Pennsylvania: *See—*
Hansel, William B., 4,281,534, Cl. 73-49.200.

Sung, Rodney L., to Texaco Inc. Novel fuel composition containing alcohol. 4,282,007, Cl. 44-53.000.

Sung, Rodney L., to Texaco Inc. Novel fuel composition containing alcohol. 4,282,008, Cl. 44-53.000.

Sung, Rodney L.: *See—*
Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., 4,282,107, Cl. 252-42.700.

Sunmark, Inc.: *See—*
Barnes, J. Ray; Holdegraver, Robert E.; and Meibaum, Raymond K., 4,282,263, Cl. 426-572.000.

Sunnen Products Company: *See—*
Rutter, Harold T., 4,281,482, Cl. 51-168.000.

Sutter, George W.: *See—*
Miller, George J.; and Sutter, George W., 4,281,447, Cl. 29-568.000.

Suys, Andre R.; and Sneyers, Hendrik H., to Agfa-Gevaert N.V. Photoconductive recording material containing a zinc oxide particle and a metallic mercapto compound. 4,282,299, Cl. 430-89.000.

Suzuki, Atsuo: *See—*
Kimata, Kei; Kaneko, Masatoshi; Fukunaga, Shoichi; Kato, Toshiharu; Ikeda, Takeshi; and Suzuki, Atsuo, 4,281,797, Cl. 239-533.120.

Suzuki, Masao; Matsuo, Takeshi; and Yamada, Naomichi, to Nippon Oil and Fats Co., Ltd. Method of producing hydrogenated fatty acids. 4,282,163, Cl. 260-409.000.

Suzzi, Robert J.: *See—*
Mouille, Rene L.; Genoux, Gerard C. L.; Declercq, Marc A.; Leman, Jean-Luc M.; and Suzzi, Robert J., 4,281,967, Cl. 416-145.000.

Svedberg, Per, to ASEA Aktiebolag. Overvoltage protection means for protecting low power semiconductor components. 4,282,555, Cl. 361-56.000.

Swersey, Burt L.; and Fried, Peter. Scale. 4,281,730, Cl. 177-144.000.

Swift, Harold E.: *See—*
Wu, Ching-Yong; Swift, Harold E.; and Bozik, John E., 4,282,384, Cl. 568-574.000.

Sy, Anita O.; and Raksis, Joseph W., to W. R. Grace & Co. Conversion of amides to isocyanates via phase transfer catalysis. 4,282,167, Cl. 260-453.00P.

Sylvester, Robert W.: *See—*
Reeves, James W.; Sylvester, Robert W.; and Wells, David F., 4,282,185, Cl. 422-142.000.

Synthelabo: *See—*
Bigg, Dennis C. H., 4,282,225, Cl. 424-251.000.

Sypula, Donald S.: *See—*
Murphy, Cornelius B.; and Sypula, Donald S., 4,282,296, Cl. 430-39.000.

Syva Company: *See—*
Rubenstein, Kenneth E.; and Ullman, Edwin F., 4,282,325, Cl. 435-188.000.

Szilagyi, Dezso: *See—*
Cunningham, John P.; and Szilagyi, Dezso, 4,281,818, Cl. 251-307.000.

T.I.C. Enterprises, Limited: *See—*
Burley, William G., 4,281,802, Cl. 242-55.000.

Tachi, Katsuichi; Ninomiya, Ichiro; and Takayama, Jun, to Sony Corporation. Apparatus for reproducing a video signal including an address signal when the video tape moves at various speeds. 4,282,552, Cl. 360-70.000.

Tacke, Kenneth L.; Galbraith, Lyle D.; and Stewart, Hudson, to Rockcor, Inc. Tire sealant applicator. 4,281,621, Cl. 118-500.000.

Tackland, Thomas A.: *See—*
McChesney, John L.; Tackland, Thomas A.; and Turner, Ian, 4,281,620, Cl. 118-410.000.

Taguchi, Tetsu, to Nippon Electric Co., Ltd. Speech analyzer comprising circuits for calculating autocorrelation coefficients forwardly and backwardly. 4,282,405, Cl. 179-1.0SC.

Takacs, Istvan; Bosits, Gyula; Vereczkey, Endre; and Kerey, Gyorgy, to Richter Gedeon Vegyeszeti Gyar Rt. Filtering apparatus. 4,282,101, Cl. 210-403.000.

Takahashi, Susumu, to Sansui Electric Company. System for transmission and reception of discrete four channel stereo. 4,282,401, Cl. 179-1.0GH.

Takasugi, Wasao: *See—*
Kanazawa, Yasunori; Arai. Takao; Yokozawa, Norio; and Takasugi, Wasao, 4,282,551, Cl. 360-32.000.

Takayama, Jun: *See—*
Tachi, Katsuichi; Ninomiya, Ichiro; and Takayama, Jun, 4,282,552, Cl. 360-70.000.

Takayama, Syuichi, to Olympus Optical Co., Ltd. Camera apparatus for endoscope. 4,281,910, Cl. 354-62.000.

Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vibration damping device for a mechanical clutch release system for a motor vehicle. 4,281,753, Cl. 192-99.00S.

Takeuchi, Seizi: *See—*
Fujita, Kazunori; Uno, Shigeo; Takeuchi, Seizi; and Yamashita, Hisao, 4,282,092, Cl. 210-682.000.

Takezi, Hiroyuki: *See—*
Kunishio, Misao; Shirai, Kenshi; and Takezi, Hiroyuki, 4,282,100, Cl. 210-384.000.

Takitani, Keiichiro: *See—*
Yamagata, Mitsukuni; Takitani, Keiichiro; Hasuno, Sadao; and Motoda, Kuniaki, 4,282,047, Cl. 148-143.000.

Tamura, Junso: *See—*
Yato, Fumihiro; Kitayama, Seishi; Tamura, Junso; Ishigami, Hikoichi; and Kurematsu, Akira, 4,282,406, Cl. 179-1.0SC.

Tan, Hong S.: *See—*
Verwey, Jan; and Tan, Hong S., 4,282,145, Cl. 260-239.00A.

Tanaka, Kazuo, to Canon Kabushiki Kaisha. Zoom lens. 4,281,906, Cl. 350-427.000.

Tanaka, Masahiro; and Konoshima, Katunaga, to Olympus Optical Company, Ltd. Apparatus for cleaning endoscope. 4,281,674, Cl. 134-95.000.

Tang, Louis S.: *See—*
Runkle, Dean E.; Tang, Louis S.; and Harrison, Gregory K., 4,281,585, Cl. 91-5.000.

Tani, Tatsuo: *See—*
Ohta, Sakae; and Tani, Tatsuo, 4,281,557, Cl. 74-89.220.

Tanimoto, Akira; and Inoue, Tomohiro, to Sharp Kabushiki Kaisha. Clef and scale indicator for music instruments. 4,281,578, Cl. 84-470.00R.

Tanimoto, Akira; Masuzawa, Sigeaki; Shibata, Shinya; and Nishizaki, Shinzo, to Sharp Kabushiki Kaisha. Synthetic-speech calculators. 4,282,404, Cl. 179-1.0SM.

Tarn Textiles Limited: *See—*
Holland, Judith J., 4,281,873, Cl. 297-118.000.

Tashma, Zev: *See—*
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,282,213, Cl. 424-200.000.

Tauber, Thomas E.; and Chapman, George E., to Technical Development Co. Gas and failure particle separator system. 4,282,016, Cl. 55-204.000.

Taylor, Allan H.: *See—*
Jackson, Liam R.; and Taylor, Allan H., 4,281,581, Cl. 411-19.000.

Taylor, Andrew W.: *See—*
Guest, Angela W.; Taylor, Andrew W.; and Ramage, Robert, 4,282,373, Cl. 560-181.000.

Taylor, Jeffrey L.: *See—*
Payne, F. Leland; and Taylor, Jeffrey L., 4,282,578, Cl. 364-573.000.

Taylor, Raymond G., to Western Electric Company, Inc. Speech networks for telephone sets. 4,282,409, Cl. 179-81.00R.

TDK Electronics, Ltd.: *See—*
Makino, Motohiko; Imamura, Kenji; and Kurosawa, Yoshinori, 4,282,302, Cl. 430-107.000.

Teague, Walter D., Jr.; and Sempliner, Arthur T. Diverter attachment for water-powered appliance. 4,281,681, Cl. 137-562.000.

Technical Development Co.: *See—*
Tauber, Thomas E.; and Chapman, George E., 4,282,016, Cl. 55-204.000.

Techplastics, Inc.: *See—*
Streit, Kenneth F., 4,281,860, Cl. 285-137.00R.

Teel, Kenneth D. Safety stirrup. 4,281,503, Cl. 54-49.000.

Tektronix, Inc.: *See—*
Stein, William W., 4,282,456, Cl. 313-419.000.

Teledyne Industries, Inc.: *See—*
Kiley, Leo R., 4,282,113, Cl. 252-359.0CG.

Tellabs, Inc.: *See—*
Stewart, Robert C., 4,282,411, Cl. 179-170.200.

Tencor Instruments: *See—*
Kren, George J.; Urbanek, Karel; and Wheeler, William R., 4,282,483, Cl. 324-158.00R.

Tennessee Valley Authority: *See—*
Hsieh, Shuang-Shii; and Brooks, Dennis G., 4,282,089, Cl. 209-166.000.

Terauchi, Ryugo. Automatic urine collecting apparatus. 4,281,655, Cl. 128-278.000.

Terpay, John M., to Dan River Incorporated. Woven fabrics containing glass fibers and abrasive belts made from same. 4,282,011, Cl. 51-298.000.

Terpay, John M. Pressure-sensitive flocked fastener and method of making same. 4,282,051, Cl. 156-71.000.

Tersteegen, Johannes: *See—*
Onken, Reiner; Mansfeld, Gunter; and Tersteegen, Johannes, 4,281,584, Cl. 91-1.000.

Teruyama, Hideo, to Kayabakogyokabushikikaisha. Seal mechanism in gear pumps or motors. 4,281,974, Cl. 418-132.000.

Tetra Pak Developpement SA: *See—*
Ignell, Rolf L., 4,281,769, Cl. 215-12.00R.

Texaco Inc.: *See—*
Austin, Thomas H., 4,282,330, Cl. 521-118.000.
Sung, Rodney L., 4,282,007, Cl. 44-53.000.
Sung, Rodney L., 4,282,008, Cl. 44-53.000.
Whittington, Lawrence E.; and Haltmar, Warren C., 4,281,714, Cl. 166-274.000.
Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., 4,282,107, Cl. 252-42.700.

Texas Instruments Incorporated: *See—*
Evetts, Samuel G.; Lawson, John D.; and Penn, William D., 4,282,589, Cl. 367-90.000.
McElroy, David J., 4,282,446, Cl. 307-238.500.
Voigt, William C., 4,282,567, Cl. 363-15.000.
Yashin, Michael A.; and Rebelo, Lucilio A., 4,282,003, Cl. 29-619.000.
Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., 4,282,597, Cl. 368-280.000.

Texas Iron Works, Inc.: *See—*
Braddick, Britt O.; and Lindsey, Hiram E., 4,281,711, Cl. 166-118.000.

Textron, Inc.: *See—*
Strengowski, Stanley S., 4,281,541, Cl. 73-264.000.

Textured Products, Inc.: *See—*
George, Stephen; and George, Thomas H., 4,282,283, Cl. 428-228.000.
George, Stephen, 4,282,284, Cl. 428-251.000.

Tezuka, Nobuo; Hashimoto, Teiji; Senuma, Mitio; and Iwata, Yutaka, to Canon Kabushiki Kaisha. Focal plane shutter. 4,281,914, Cl. 354-244.000.

Th. Goldschmidt AG: *See—*
Muller, Wolfgang; and Witzke, Lothar, 4,282,190, Cl. 423-104.000.

Therm-O-Disc, Incorporated: *See—*
Place, Donald E., 4,282,505, Cl. 337-365.000.

Theuer, Richard C., to Bristol-Myers Company. Fat compositions for infant formulas. 4,282,265, Cl. 426-607.000.

Thibault, Edmond: *See—*
Barbelet, Michel; Caujolle, Jean-Pierre; Scramoncin, Claude; and Thibault, Edmond, 4,282,072, Cl. 204-1.00T.

Thiis-Evensen, Harald, to Isola Fabrikker A/S. Procedure for covering roofs. 4,282,050, Cl. 156-71.000.

Thomas Jefferson University: *See—*
Lefer, Allan M., 4,282,252, Cl. 424-317.000.

Thomas Steel Strip Corporation: *See—*
Hirt, Theodore A.; and Dillon, Robert H., 4,282,073, Cl. 204-28.000.

Thomas, Wallace N., to Pickands Mather & Co. Inching device. 4,281,746, Cl. 192-3.00R.

Thomas, Wilbur E. Method and apparatus for ejecting single sheets from a stack of sheets in a tray. 4,281,829, Cl. 271-10.000.

Thompson, Donald G.: *See—*
Summers, Christopher P.; and Thompson, Donald G., 4,282,447, Cl. 307-255.000.

Thompson, John S.: *See—*
Jadlocki, Joseph F., Jr.; and Thompson, John S., 4,282,260, Cl. 426-264.000.

Thor Power Tool Company: *See—*
Dudek, Edmund C., 4,281,538, Cl. 73-862.210.

Thorsen, Gunnar; and Monhemius, Andrew J. Precipitation of metal values from organic media. 4,282,189, Cl. 423-24.000.

Threlfall, James. Position maintaining tool. 4,281,443, Cl. 29-271.000.

Tieszen, Dale O.; and Scoggins, Lacey E., to Phillips Petroleum Company. Preparation of branched polymers of arylene sulfide. 4,282,347, Cl. 528-388.000.

TIF Instruments, Inc.: *See—*
Lieberman, Leonard N., 4,282,521, Cl. 340-632.000.

Timex Corporation: *See—*
Lowdenslager, John; and Zatsky, Norman C., 4,282,595, Cl. 368-200.000.

Tin, Kam B.: *See—*
Norman, Stanley R. C.; and Tin, Kam B., 4,282,488, Cl. 328-112.000.

Tindall, Richard F.; Baddeley, Eric R.; and Rudd, Peter W., to Johnson, Matthey & Co., Limited. Measurement of temperature. 4,282,507, Cl. 338-25.000.

Tinkelenberg, Arie; Vaessen, Henricus W. L. M.; Suen, Kwai W.; and Van Doorn, Anton J., to Methanol Chemie Nederland V.o.F. Manufacture of chipboard having high strength and reduced formaldehyde emission, using a minor amount of protein in combination with low formaldehyde:urea resins. 4,282,119, Cl. 260-6.000.

Tobin, Thomas J., to S&C Electric Company. Fault limiter having a one-piece enclosure of glass-reinforced resin. 4,282,504, Cl. 337-186.000.

Tocker, Stanley, to Du Pont de Nemours, E. I., and Company. Process for preparing insecticidal compositions. 4,282,209, Cl. 424-81.000.

Tohzima, Hisaaki: *See—*
Suga, Masaaki; Kobayashi, Chiaki; and Tohzima, Hisaaki, 4,281,751, Cl. 192-0.092.

Tokico Ltd.: *See—*
Uemura, Tamio, 4,281,685, Cl. 137-628.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Kobayashi, Yuzi; and Nishikatsu, Hiroshi, 4,281,463, Cl. 33-299.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hirose, Minoru, 4,282,424, Cl. 235-379.000.
Kobayashi, Sumio; and Matsushita, Tetsushi, 4,282,568, Cl. 363-54.000.
Kurosawa, Ryoichi; and Kudor, Toshiaki, 4,282,570, Cl. 363-87.000.
Kusakabe, Hiromi, 4,282,490, Cl. 329-103.000.
Matsuura, Tetsuo, 4,282,439, Cl. 250-470.000.
Nakai, Kaichiro, 4,282,463, Cl. 315-39.710.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Nishida, Susumu; Inouye, Tamon; Yoshida, Tadatoki; and Saito, Kiyoto, 4,282,438, Cl. 250-445.00T.

Tolonen, Yrjo: *See—*
Luotonen, Pekka; and Tolonen, Yrjo, 4,281,497, Cl. 52-730.000.

Tomasch, Hellmut; Bacher, Robert; Konrath, Karl; Koster, Claus; and Nothdurft, Heinz, to Robert Bosch GmbH. Fuel injection pump control lever construction. 4,281,558, Cl. 74-99.00R.

Tomita, Kosuke: *See—*
Imahori, Kazutomo; and Tomita, Kosuke, 4,282,352, Cl. 536-27.000.

Tomoda, Yasuro: *See—*
Kawazoe, Masayuki; Tomoda, Yasuro; Sasaki, Atsuo; and Kaneko, Isao, 4,281,821, Cl. 266-44.000.

Tompkins, Barry J.: *See*—
Bynre, Stanley W.; Tompkins, Barry J.; and Hayes, Ernest B., 4,281,671, Cl. 131-335.000.
Tompkins, Russell E.: *See*—
Frischmann, Peter G.; Luborsky, Fred E.; and Tompkins, Russell E., 4,282,046, Cl. 148-121.000.
Torbet, Walter: *See*—
Fiegl, George; and Torbet, Walter, 4,282,184, Cl. 422-106.000.
Torok, Ernest J.: *See*—
Harvey, William A.; and Torok, Ernest J., 4,281,905, Cl. 350-377.000.
Torok, Steve F.; Formica, Vincent A.; and Lange, George P., to United States of America, Navy. Site occupancy detector. 4,282,585, Cl. 367-2.000.
Torre, Giancarlo D., to Rockwell-Rimoldi S.p.A. Cutting apparatus for sewing machines. 4,281,607, Cl. 112-130.000.
Toshin Seiko Kabushiki Kaisha: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Suma, Miki, 4,282,288, Cl. 428-408.000.
Toyo Kogyo Co., Ltd.: *See*—
Yano, Haruto, 4,282,561, Cl. 362-65.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kato, Hiroshi; and Morita, Yasuhiro, 4,281,752, Cl. 192-99.00R.
Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, 4,281,753, Cl. 192-99.00S.
Treace, Harry T., to Richards Manufacturing Company, Inc. Middle ear ossicular replacement prosthesis having a movable joint. 4,281,419, Cl. 3-1.900.
Trenkle, Robert W.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Vock, Manfred H.; Luccarelli, Domenick, Jr.; Schmitt, Frederick L.; Stork, Gilbert; MacDonald, Timothy; and Lieberman, Arthur L., 4,282,274, Cl. 427-402.000.
Trio Kabushiki Kaisha: *See*—
Wada, Takeshi; Ienaka, Masanori; Kominami, Yasuo; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,282,448, Cl. 307-273.000.
Trotta, Robert A., to Gillette Company, The. Shaving system. 4,281,454, Cl. 30-47.000.
Trotta, Robert A.: *See*—
Douglass, Paul W.; and Trotta, Robert A., 4,281,456, Cl. 30-89.000.
Trousil, Edward G., to Chapman Enterprises Corp. Car undercoating composition. 4,282,131, Cl. 260-29.70R.
Trutzschler GmbH & Co. KG: *See*—
Marx, Hans-Jurgen, 4,281,437, Cl. 19-80.00R.
TRW Inc.: *See*—
Spiegelberg, William D.; Moracz, Donald J.; and Lake, Frank N., 4,281,528, Cl. 72-46.000.
Warren, Walter B.; and Marosko, Ronald J., 4,282,487, Cl. 324-445.000.
Tsang, Won-Tien, to Bell Telephone Laboratories, Incorporated. Planar P-I-N photodetectors. 4,282,541, Cl. 357-30.000.
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Warren, Walter B.; and Marosko, Ronald J., to TRW Inc. Subsea hydrocarbon sensor system. 4,282,487, Cl. 324-445.000.
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Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., to Eastman Kodak Company. Azo dyes derived from 5-membered heterocyclic amines and aromatic amine couplers containing sulfo groups, or salts thereof. 4,282,144, Cl. 260-152.000.
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Werner, Charles E., to Mead Corporation, The. Coating method apparatus for capsular coatings. 4,282,275, Cl. 427-428.000.
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Coviello, John W., 4,282,550, Cl. 358-160.000.
Eckels, Phillip W., 4,282,450, Cl. 310-52.000.
Edelman, Leonard E.; and Runk, Robert H., 4,282,122, Cl. 260-18.0EP.
Elms, Robert T.; and Vercellotti, Leonard C., 4,282,576, Cl. 364-483.000.
Johnston, Robert J.; Layciak, Stephen G.; and Cametti, George M., 4,282,414, Cl. 200-160.000.
Matty, Thomas C., 4,282,466, Cl. 318-434.000.
Westwood Pharmaceuticals Inc.: *See—*
Warner, Paul L., Jr.; and Zusi, F. Christopher, 4,282,206, Cl. 424-59.000.
Weyer, Rudi; Hitzel, Volker; Geisen, Karl; and Regitz, Gunter, to Hoechst Aktiengesellschaft. Sulfonyl ureas and pharmaceutical preparations thereof. 4,282,239, Cl. 424-274.000.
Whalin, Jeffery A.: *See—*
Wakat, Emory, Jr.; Dworsky, Lawrence N.; Krolak, Leo V.; Whalin, Jeffery A.; and Mech, Harold W., 4,282,454, Cl. 310-348.000.
Wheaton, Frank H., to Wheaton Industries. Method of using a waste glass collector and cullet dumper. 4,282,020, Cl. 65-28.000.
Wheaton Industries: *See—*
Wheaton, Frank H., 4,282,020, Cl. 65-28.000.
Wheeler, William R.: *See—*
Kren, George J.; Urbanek, Karel; and Wheeler, William R., 4,282,483, Cl. 324-158.00R.
Whelan, James M.: *See—*
Copley, Stephen M.; Rana, Virendra V. S.; and Whelan, James M., 4,282,024, Cl. 65-144.000.
Wheldon, Alfred G.; and Cockerill, Peter E., to Distillers Company (Carbon Dioxide) Limited, The. Process for preparing an extract of hops. 4,282,259, Cl. 426-231.000.
White, David R., to Upjohn Company, The. Intermediates for preparing spectinomycin and analogs thereof. 4,282,152, Cl. 260-340.300.
White, James A., to General Electric Co. Unitized structure for a microwave oven. 4,282,416, Cl. 219-10.55R.
Whitehouse, Harper J.: *See—*
Speiser, Jeffrey M.; and Whitehouse, Harper J., 4,282,579, Cl. 364-726.000.
Whitney, Charlie B.: *See—*
Lackey, James A.; Nordwall, Harold L.; and Whitney, Charlie B., 4,282,394, Cl. 136-245.000.
Whittaker Corporation: *See—*
Kariagin, Nikolai, 4,281,867, Cl. 294-83.00R.
Whittington, Lawrence E.; and Haltmar, Warren C., to Texaco Inc. Lithium salts as additives in petroleum recovery processes. 4,281,714, Cl. 166-274.000.
Widder Corporation: *See—*
Krieg, Adrian H., 4,281,459, Cl. 30-228.000.
Wiechert, Edelbert, to Siemens Aktiengesellschaft. Locking device for a transport container of an electrically driven, rail-bound transport car with a contact device actuatable by a transport container cover for monitoring the locking state. 4,281,864, Cl. 292-229.000.
Wiemann, Gunter: *See—*
Batz, Hans-Georg; Linke, Hans-Ralf; Stellner, Klaus; and Wiemann, Gunter, 4,282,151, Cl. 260-326.00A.
Wigdahl, Arthur G. Domestic boiler. 4,281,604, Cl. 110-234.000.
Wijma, Willem S.: *See—*
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Wikner, Jan: *See—*
Borjesgard, Pehr; Cetrelli, Renzo; Kullendorff, Anders; Schon, Stur; and Wikner, Jan, 4,281,510, Cl. 60-39.320.
Wiley, Paul F.: *See—*
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Wilkes, Glenn R.: *See—*
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Wilkinson Sword Limited: *See—*
Dixon, Richard B.; and Carr, Peter, 4,281,455, Cl. 30-47.000.
Williams, Frederick J.: *See—*
Knight, Lindsay C.; Cash, David A.; Stewart, Duncan; Cottis, Robert A.; Bowyer, William H.; Newnham, Robert C.; Williams, Frederick J.; and Pardon, David W., 4,282,453, Cl. 310-335.000.
Williams, Robert M. Expolosion suppression system for fire or expolosion susceptible enclosures. 4,281,717, Cl. 169-20.000.
Williamson, Michael, to Owens-Corning Fiberglas Corporation. Electrode melting-Z type electrode firing with continuous zones. 4,282,393, Cl. 13-6.000.
Willis, Donald H.: *See—*
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Wilson, Charles A., II: *See*—
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Wilson, John H.; and Hammett, Dillard S., to Sedco, Inc. Self-propelled semi-submersible service vessel. 4,281,615, Cl. 114-265.000.
Wilson, Phillip S.: *See*—
Mark, Victor; and Wilson, Phillip S., 4,282,134, Cl. 260-30.80R.
Wilson, Pryce. Concentrating vacuum isolated solar energy collection apparatus employing reflector. 4,281,637, Cl. 126-422.000.
Wilson, Stanley, Jr.; and Borger, Robert M., to Potter Electric Signal Company. Automatic ringback for direct current monitoring system. 4,282,517, Cl. 340-503.000.
Winans, Esther D.: *See*—
Deen, Harold E.; Winans, Esther D.; Ryer, Jack; and O'Halloran, Rosemary, 4,282,108, Cl. 252-51.50R.
Winderman, Jay B.; and Kuffer, Fernand B., to General Dynamics, Pomona Division. Multi-spectral detection system with common collecting means. 4,282,527, Cl. 343-725.000.
Windmoller & Holscher: *See*—
Bosse, Frank; and Zemella, Horst, 4,282,055, Cl. 156-464.000.
Wing, Lawrence D.; and Cunningham, Joseph W., to United States of America, National Aeronautics and Space Administration. Automatic thermal switch. 4,281,708, Cl. 165-32.000.
Wingate, Kenneth G. Adjustable position sonar transducer depth finder. 4,282,590, Cl. 367-104.000.
Winiasz, Michael E. Indexing and synchronizing clutch mechanism. 4,281,748, Cl. 192-28.000.
Winkler, Heinrich; Rumold, Gerhard; and Schummer, Helmut, to Siemens Aktiengesellschaft. Detector for detecting voltage breakdowns on the high-voltage side of an electric precipitator. 4,282,014, Cl. 55-105.000.
Winter, Claus; and Ehrmann, Wolfgang, to Inbauproduct Innenausbausysteme GmbH & Co. KG. Sliding door closet. 4,281,435, Cl. 16-94.00R.
Winter, Wolfgang: *See*—
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Wirth, Friedrich: *See*—
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Wirth, Xaver, to Knorr-Bremse GmbH. Brake disk for disk brakes on a rail vehicle. 4,281,745, Cl. 188-218.0XL.
Wisconsin Alumni Research Foundation: *See*—
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Wojcik, Bruce C.: *See*—
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Wolfbeiss, Erich: *See*—
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Wollwage, Peter: *See*—
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Wong, Ching-Ping: *See*—
Dinella, Donald; and Wong, Ching-Ping, 4,282,314, Cl. 430-413.000.
Wong, Wilson T., to Sperry Rand Corporation. Floating point processor architecture which performs subtraction with reduced number of guard bits. 4,282,582, Cl. 364-748.000.
Wood, Darwin L.: *See*—
Kometani, Thomas Y.; and Wood, Darwin L., 4,282,196, Cl. 423-337.000.
Wood, Milton D.; and Silverman, Daniel, to M. D. Wood, Inc. Method and apparatus for monitoring the position and movement progress of the flame front in an underground combustion. 4,281,713, Cl. 166-251.000.
Wright, Hal E.: *See*—
Van Allan, James A.; Rossi, Louis J.; Bloom, Melvin S.; Regan, Michael T.; Wright, Hal E.; and Kaukeinen, Joseph Y., 4,282,354, Cl. 542-441.000.
Wright, John J., to Schering Corporation. Selective 3''-N-acylation of 1,3''-di-N-unprotected-poly-N-protected-4,6-di-O-(aminoglycosyl)-1,3-diaminocyclitols. 4,282,350, Cl. 536-10.000.
Wu, Ching-Yong; Swift, Harold E.; and Bozik, John E., to Gulf Research & Development Company. Preparation of diisopropylebenzene hydroperoxide. 4,282,384, Cl. 568-574.000.
Wu, Yulin, to Phillips Petroleum Company. Production of cyclohexylbenzene hydroperoxide. 4,282,382, Cl. 568-570.000.
Wuerzer, Bruno: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,282,027, Cl. 71-76.000.
Schirmer, Ulrich; Rohr, Wolfgang; Wuerzer, Bruno; and Fett, Kurt, 4,282,369, Cl. 560-25.000.
Wuestner, Friedrich, to Siemens Aktiengesellschaft. Plasma torch for micro-plasma welding. 4,282,418, Cl. 219-121.0PP.
Wurlitzer Company, The: *See*—
Hoskinson, William R.; and Machanian, William V., 4,282,575, Cl. 364-479.000.
Wuster, Walter L.: *See*—
Oglesby, Frank P.; and Wuster, Walter L., 4,281,809, Cl. 244-3.160.
Wyzenbeek, Andrew, to Usher, Laura May. Life-prolonging device for hearing-aid batteries. 4,282,474, Cl. 320-2.000.
Xerox Corporation: *See*—
Bayley, Robert D., 4,282,304, Cl. 430-137.000.
Bergen, Richard F., 4,282,303, Cl. 430-120.000.
Boggs, David R.; and Metcalfe, Robert M., 4,282,512, Cl. 340-147.0LP.
Cross, Thomas R., 4,281,920, Cl. 355-75.000.
Markham, Roger G., 4,282,532, Cl. 346-75.000.
McChesney, John L.; Tackland, Thomas A.; and Turner, Ian, 4,281,620, Cl. 118-410.000.
Murphy, Cornelius B.; and Sypula, Donald S., 4,282,296, Cl. 430-39.000.
Smith, Michael; Hackett, Charles F.; and Radler, Richard W., 4,282,298, Cl. 430-58.000.
Sprague, Robert A.; and Johnson, Richard V., 4,281,904, Cl. 350-356.000.
Yagasaki, Toshiaki: *See*—
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuichi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.
Yagihara, Morio: *See*—
Watanabe, Toshiyuki; Hirose, Takeshi; Yagihara, Morio; and Yokota, Yukio, 4,282,312, Cl. 430-384.000.
Yamabe, Shigeru: *See*—
Fujimoto, Yasuo; and Yamabe, Shigeru, 4,282,245, Cl. 424-275.000.
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Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,282,257, Cl. 426-17.000.
Yamada, Mikio: *See*—
Kunimatsu, Yoshio; Okumura, Hajime; Masai, Hiroshi; Yamada, Koki; and Yamada, Mikio, 4,282,257, Cl. 426-17.000.
Yamada, Naomichi: *See*—
Suzuki, Masao; Matsuo, Takeshi; and Yamada, Naomichi, 4,282,163, Cl. 260-409.000.
Yamada, Ryozo; Okamoto, Naomichi; and Meiri, Toshimi, to President Shizuoka University. Super wide band light transmitting system. 4,281,893, Cl. 350-96.310.
Yamada, Shigemichi: *See*—
Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, 4,281,753, Cl. 192-99.00S.
Yamada, Tsuneo: *See*—
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Yamagata, Mitsukuni; Takitani, Keiichiro; Hasuno, Sadao; and Motoda, Kuniaki, to Kawasaki Steel Corporation. Method of producing steel pipe material for oil well. 4,282,047, Cl. 148-143.000.
Yamaguchi, Hiroshi, to Nissan Motor Company, Limited. Exhaust gas recirculation and idle speed control device. 4,281,631, Cl. 123-571.000.
Yamaguchi, Tamikazu, to Minolta Camera Kabushiki Kaisha. Tesser type objective lens system having a rear aperture stop. 4,281,908, Cl. 350-476.000.
Yamashita, Hisao: *See*—
Fujita, Kazunori; Uno, Shigeo; Takeuchi, Seizi; and Yamashita, Hisao, 4,282,092, Cl. 210-682.000.
Yanagida, Hiroaki: *See*—
Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayosi; and Yoshida, Tetsuro, 4,282,200, Cl. 423-598.000.
Yang, Yin-Lung: *See*—
Chiang, Nei-Ho, 4,281,825, Cl. 269-29.000.
Yano, Haruto, to Toyo Kogyo Co., Ltd. Automobile headlight lighting apparatus. 4,282,561, Cl. 362-65.000.
Yarema, Dennis W. Manual volume control device for guitar or the like. 4,281,573, Cl. 84-1.160.
Yashin, Michael A.; and Rebelo, Lucilio A., to Texas Instruments Incorporated. Method for constructing a self-regulating electric heater. 4,282,003, Cl. 29-619.000.
Yates, Richard A., to Du Pont de Nemours, E. I., and Company. Removal and concentration of lower molecular weight organic acids from dilute solutions. 4,282,323, Cl. 435-140.000.
Yates, Rowland K. Paper cutter assembly. 4,281,571, Cl. 83-542.000.
Yato, Fumihiro; Kitayama, Seishi; Tamura, Junso, Ishigami, Hikoichi; and Kurematsu, Akira, to Kokusai Denshin Denwa Kabushiki Kaisha. Adaptive pitch detection system for voice signal. 4,282,406, Cl. 179-1.0SC.
Yenawine, David L.; Lowder, Richard K.; Power, Delwin L.; and Summers, Tommy L., to Texas Instruments Incorporated. Metal-coated plastic housing for electronic components and the method of making same. 4,282,597, Cl. 368-280.000.
Yokota, Yukio: *See*—
Watanabe, Toshiyuki; Hirose, Takeshi; Yagihara, Morio; and Yokota, Yukio, 4,282,312, Cl. 430-384.000.
Yokoyama, Naruo: *See*—
Atsukawa, Masumi; Nishimoto, Yoshihiko; Yokoyama, Naruo; and Sera, Toshikuni, 4,282,115, Cl. 252-440.000.
Yokozawa, Norio: *See*—
Kanazawa, Yasunori; Arai, Takao; Yokozawa, Norio; and Takasugi, Wasao, 4,282,551, Cl. 360-32.000.
Yonezawa, Kazuya; Furukawa, Hisao; and Azuma, Masaaki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable diallyl phthalate compounds and process for producing same. 4,282,336, Cl. 525-102.000.
Yonezu, Hiroo; and Ueno, Masayasu, to Nippon Electric Co., Ltd. Stripe-geometry double heterojunction laser element. 4,282,494, Cl. 331-94.50H.

Yonezu, Hiroo: *See*—
Shinohara, Tsuneo; and Yonezu, Hiroo, 4,281,891, Cl. 350-96.180.

Yoshida, Akihiko: *See*—
Fujito, Katsuyuki; Hasegawa, Seiro; Unoguchi, Takehiko; Nishino, Atsushi; and Yoshida, Akihiko, 4,282,480, Cl. 324-61.00R.

Yoshida Kogyo K.K.: *See*—
Kaminaga, Hiromitsu, 4,281,477, Cl. 49-453.000.
Mitani, Hiroshi; and Uozumi, Kenichi, 4,281,608, Cl. 112-150.000.

Yoshida, Matuju; and Hayashi, Shukichi, to Nippondenso Co., Ltd. Apparatus for initializing a vehicle controlling digital computer. 4,282,574, Cl. 364-431.000.

Yoshida, Tadatoki: *See*—
Nishida, Susumu; Inouye, Tamon; Yoshida, Tadatoki; and Saito, Kiyoto, 4,282,438, Cl. 250-445.00T.

Yoshida, Tetsuro: *See*—
Nishikawa, Yasuo; Yanagida, Hiroaki; Shimizu, Tadao; Hori, Masayosi; and Yoshida, Tetsuro, 4,282,200, Cl. 423-598.000.

Yoshimoto, Yuichiro: *See*—
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Yoshimura, Shigeru: *See*—
Nomura, Akihiro; Hayakawa, Kimiaki; Yoshimura, Shigeru; Masuda, Shunichi; Shimizu, Katsuichi; and Yagasaki, Toshiaki, 4,281,919, Cl. 355-50.000.

Yoshimura, Yasumasa: *See*—
Ochiai, Akio; Iida, Noriyuki; and Yoshimura, Yasumasa, 4,281,898, Cl. 350-281.000.

Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Suma, Miki, to Shinagawa Shirorenga Kabushiki Kaisha; and Toshin Seiko Kabushiki Kaisha. Graphite refractory article having dense structure with low porosity. 4,282,288, Cl. 428-408.000.

Youmans, Arthur H., to Dresser Industries, Inc. Method and apparatus for logging inclined earth boreholes. 4,282,523, Cl. 340-860.000.

Young, Melvin R. Marine fender and method of making the same. 4,281,610, Cl. 114-219.000.

Young, Prussin, MGK, J.V.: *See*—
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,207, Cl. 424-78.000.
Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., 4,282,208, Cl. 424-78.000.

Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticides. 4,282,207, Cl. 424-78.000.

Young, Robert W.; Prussin, Samuel; and Gaylord, Norman G., to Young, Prussin, MGK, J.V. Adherent controlled release pesticides. 4,282,208, Cl. 424-78.000.

Young, Rodney C.: *See*—
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,282,213, Cl. 424-200.000.
Durant, Graham J.; Ganellin, Charon R.; and Young, Rodney C., 4,282,234, Cl. 424-269.000.

Young, Thomas A. Light absorptivity measuring device. 4,281,932, Cl. 356-416.000.

Youngers, Stephen A., to J. I. Case Company. Joint for articulated vehicles. 4,281,848, Cl. 280-494.000.

Yu, Hwa N.: *See*—
Ning, Tak H.; Osburn, Carlton M.; and Yu, Hwa N., 4,282,540, Cl. 357-23.000.

Yukiyasu, Minoru: *See*—
Takemoto, Kazuhiko; Ninomiya, Toshiyuki; Yamada, Shigemichi; and Yukiyasu, Minoru, 4,281,753, Cl. 192-99.00S.

Zacky, Ralf G. Panel molding support structure. 4,281,883, Cl. 312-140.000.

Zatsky, Norman C.: *See*—
Lowdenslager, John; and Zatsky, Norman C., 4,282,595, Cl. 368-200.000.

Zeeh, Bernd: *See*—
Goetz, Norbert; Steimmig, Anna; Zeeh, Bernd; and Adolphi, Heinrich, 4,282,238, Cl. 424-273.00R.

Zemanek, Josef, to Siemens Aktiengesellschaft. Method for synchronizing sending and receiving devices. 4,282,600, Cl. 370-100.000.

Zemella, Horst: *See*—
Bosse, Frank; and Zemella, Horst, 4,282,055, Cl. 156-464.000.

Zenbutsu, Tadashi: *See*—
Yoshino, Shigeo; Zenbutsu, Tadashi; Asami, Hajime; and Suma, Miki, 4,282,288, Cl. 428-408.000.

Zentner, John W. Method for cooling hot-rolled shapes. 4,282,048, Cl. 148-155.000.

Ziman, Stephen D., to Chevron Research Company. Herbicidal and plant-growth-regulating N-substituted-N-(2,5-dialkylpyrrol-1-yl) haloacetamides. 4,282,028, Cl. 71-90.000.

Zimmer, Herbert, to Dornier GmbH. Transverse driving bodies, particularly airplane wings. 4,281,812, Cl. 244-219.000.

Zimmerman, James E.; and Sullivan, Donald B., to United States of America, Navy. Single stage twin piston cryogenic refrigerator. 4,281,517, Cl. 62-6.000.

Zimmermann, Martin R.; and Oettli, Walter, to AMEG Verfahrens-und Umweltschutz-Technik AG. Method and apparatus for the recovering of solvents in dry cleaning units. 4,281,465, Cl. 34-26.000.

Zinser, Alan L.: *See*—
Hoernschemeyer, August B.; Zinser, Alan L.; and Myers, John F., 4,282,090, Cl. 209-291.000.

Zocher, Josef, to Singer Company, The. Lockstitch sewing by needle looper. 4,281,609, Cl. 112-184.000.

Zoleski, Benjamin H.; Sung, Rodney L.; Schierberg, Gordon R.; and Hebert, Gayle P., to Texaco Inc. Diesel crankcase lubricant composition. 4,282,107, Cl. 252-42.700.

Zorayan, Vahan: *See*—
Jacquet, Bernard; Papantoniou, Christos; Vanlerberghe, Guy; Mahieu, Claude; and Zorayan, Vahan, 4,282,203, Cl. 424-47.000.

Zotteri, Luciano: *See*—
Roggero, Arnaldo; and Zotteri, Luciano, 4,282,338, Cl. 525-153.000.

Zusi, F. Christopher: *See*—
Warner, Paul L., Jr.; and Zusi, F. Christopher, 4,282,206, Cl. 424-59.000.

Zusman, Bertram. Cantilevered cross truss construction. 4,281,486, Cl. 52-73.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Albrecht, Konrad: *See—*
Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, Re. 30,700, Cl. 424-276.000.

Arbib, Gordon F.; and Rubin, Wallace, to Multicore Solders Limited. Soldering flux composition. Re. 30,696, Cl. 148-23.000.

Askew, Herbert F.: *See—*
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.

Bock, Klaus-Detlev: *See—*
Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, Re. 30,700, Cl. 424-276.000.

Castrol Limited: *See—*
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.

Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., to Castrol Limited. Hydraulic fluids comprising orthosilicate esters. Re. 30,698, Cl. 252-78.300.

Fredrickson, James D., to Reynolds Leasing Corporation. Process for increasing the filling capacity of tobacco. Re. 30,693, Cl. 131-296.000.

Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, to Hoechst Aktiengesellschaft. Insecticidal compositions for ultra low volume application. Re. 30,700, Cl. 424-276.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. Re. 30,697, Cl. 156-384.000.

Harrington, Colin J.: *See—*
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.

Hoechst Aktiengesellschaft: *See—*
Frensch, Heinz; Albrecht, Konrad; and Bock, Klaus-Detlev, Re. 30,700, Cl. 424-276.000.

Iannicelli, Joseph, to J. M. Huber Corporation. Polyurethanes containing amino organosilane modified clay. Re. 30,699, Cl. 260-37.00N.

J. M. Huber Corporation: *See—*
Iannicelli, Joseph, Re. 30,699, Cl. 260-37.00N.

Jayne, Gerald J. J.: *See—*
Elliott, John S.; Jayne, Gerald J. J.; Askew, Herbert F.; and Harrington, Colin J., Re. 30,698, Cl. 252-78.300.

Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., Re. 30,697, Cl. 156-384.000.

Multicore Solders Limited: *See—*
Arbib, Gordon F.; and Rubin, Wallace, Re. 30,696, Cl. 148-23.000.

Reynolds Leasing Corporation: *See—*
Fredrickson, James D., Re. 30,693, Cl. 131-296.000.

Riddle, Lavis A. H., to Westland Aircraft Limited. Flexible skirt components for air cushion vehicles. Re. 30,694, Cl. 180-128.000.

Rubin, Wallace: *See—*
Arbib, Gordon F.; and Rubin, Wallace, Re. 30,696, Cl. 148-23.000.

Transport, Felix. Collapsible easel support. Re. 30,695, Cl. 206-45.240.

Westland Aircraft Limited: *See—*
Riddle, Lavis A. H., Re. 30,694, Cl. 180-128.000.

LIST OF DESIGN PATENTEES

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Container for tape cassettes. 260,051, 8-4-81, Cl. D3-35.000.

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Gajjar, Bharat J. Single-bar warp-knit fabrics. T100,901, 8-4-81, Cl. 66-195.000.
Hauser, Edward R. Uses for microfiber-based webs. T100,902, 8-4-81, Cl. 210-348.000.
Kawamura, Siyoutaro. Plunger type electromagnetic relay. T100,904, 8-4-81, Cl. 335-131.000.
Radel, Robert J.; and Sullivan, Jack M. Preparation of nitrogen fertilizers from oxalate esters prepared by the oxidative carbonylation of alcohols over noble metal catalysts utilizing regenerable 2,5-cyclohexadiene-1,4-dione oxidants. T100,903, 8-4-81, Cl. 260-396.00R.
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Radel, Robert J.; and Sullivan, Jack M., T100,903, Cl. 260-396.00R.

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CLASS 84

1.16 4,281,573
1.19 4,281,574
1.28 4,281,575
298 4,281,576
454 4,281,577
470 R 4,281,578
478 4,281,579

CLASS 89

7 4,281,582
33 BB 4,281,583

CLASS 91

1 4,281,584
5 4,281,585
52 4,281,586
290 4,281,587
4,281,588

CLASS 92

109 4,281,589
244 4,281,590

CLASS 98

38 R 4,281,592

CLASS 99

349 4,281,593
386 4,281,594

CLASS 101

177 4,281,595
269 4,281,596
365 4,281,597
470 4,281,598

CLASS 102

276 4,281,601
364 4,281,599
489 4,281,600

CLASS 106

48 4,282,035
97 4,282,036
202 4,282,037
273N 4,282,038
278 4,282,039
287.32 4,282,040

CLASS 108

161 4,281,602

CLASS 110

196 4,281,603
234 4,281,604
245 4,281,605

CLASS 112

121.15 4,281,606
130 4,281,607
150 4,281,608
184 4,281,609

CLASS 114

219 4,281,610
230 4,281,611
4,281,612
4,281,613
264 4,281,614
265 4,281,615

CLASS 118

31.5 4,281,616
68 4,281,617
202 4,281,618
325 4,281,619
410 4,281,620
500 4,281,621
653 4,281,622
668 4,281,623

CLASS 119

52 R 4,281,624
77 4,281,625

CLASS 123

25 C 4,281,626
146.5 A 4,281,627
245 4,281,628
279 4,281,629
373 4,281,630
571 4,281,631
590 4,281,632

CLASS 126

25 C 4,281,633
119 4,281,634
299 D 4,281,635
369 4,281,636
422 4,281,637
428 4,281,638
435 4,281,639
438 4,281,640
4,281,641
447 4,281,642
450 4,281,643
451 4,281,644

CLASS 128

6 4,281,646
77 4,281,647
79 4,281,648
92 BC 4,281,649
156 4,281,650
204.23 4,281,651
204.25 4,281,652
218 D 4,281,653
260 4,281,654
278 4,281,655
325 4,281,656
330 4,281,657
341 4,281,658
633 4,281,645
635 4,281,659
642 4,281,660
660 4,281,661
676 4,281,662
689 4,281,663
696 4,281,664
713 4,281,665
748 4,281,666
4,281,667
784 4,281,668
4,281,669

CLASS 131

174 4,281,672
281 4,281,670
296 Re.30,693
335 4,281,671

CLASS 132

39 4,281,673

CLASS 134

3 4,282,041
95 4,281,674
125 4,281,675
140 4,282,042

CLASS 136

245 4,282,394

CLASS 137

102 4,281,676
113 4,281,677
238 4,281,678
515.5 4,281,679
527.4 4,281,680
562 4,281,681
596.17 4,281,682
606 4,281,683
625.21 4,281,684
628 4,281,685
887 4,281,686

CLASS 138

28 4,281,687

CLASS 139

383 A 4,281,688
420 A 4,281,689

CLASS 140

71 R 4,281,690

CLASS 141

1 4,281,691
370 4,281,692

CLASS 144

34 R 4,281,693
134 D 4,281,694
312 4,281,695
4,281,696
326 R 4,281,697

CLASS 145

3.31 4,281,698

CLASS 148

1.5 4,282,043
2 4,282,044
23 Re.30,696
33.3 4,282,045
121 4,282,046
143 4,282,047
155 4,282,048

CLASS 152

158 4,281,700
4,281,701
209 R 4,281,702
4,281,703

CLASS 156

62.2 4,282,049
71 4,282,050
4,282,051
79 4,282,052
264 4,282,053
289 4,282,054
384 Re.30,697
464 4,282,055
519 4,282,056
614 4,282,057

CLASS 159

13 R 4,282,058

CLASS 160

340 4,281,704

CLASS 162

158 4,282,059
162 4,282,060

CLASS 164

10 4,281,705
292 4,281,707
463 4,281,706

CLASS 165

32 4,281,708
104.22 4,281,709
142 4,281,710

CLASS 166

118 4,281,711
250 4,281,712
251 4,281,713
274 4,281,714
317 4,281,715
339 4,281,716

CLASS 169

20 4,281,717
41 4,281,718

CLASS 172

710 4,281,719
776 4,281,720
821 4,281,721

CLASS 174

50.61 4,282,395
84 R 4,282,396
92 4,282,397
106 R 4,282,398

CLASS 175

57 4,281,722
76 4,281,723
195 4,281,724
246 4,281,725
321 4,281,726

CLASS 176

20 R 4,282,061
37 4,282,062
38 4,282,063
73 4,282,064
78 4,282,065

CLASS 177

128 4,281,727
134 4,281,728
139 4,281,729
144 4,281,730
212 4,281,731

CLASS 178

4 4,282,399
73 4,282,400

CLASS 179

1 D 4,282,402
1 GH 4,282,401
1 SC 4,282,405
4,282,406
1 SD 4,282,403
1 SM 4,282,404
18 FA 4,282,407
4,282,408
81 R 4,282,409
84 R 4,282,410
170.2 4,282,411

CLASS 180

19 H 4,281,732
69 C 4,281,733
128 Re.30,694
167 4,281,734
247 4,281,735
271 4,281,736
307 4,281,737

CLASS 181

151 4,281,738
207 4,281,739
250 4,281,740
4,281,741
257 4,281,742

CLASS 182

46 4,281,743

CLASS 187

9 R 4,281,744

CLASS 188

218 XL 4,281,745

CLASS 192

0.092 4,281,751
3 R 4,281,746
8 C 4,281,747
28 4,281,748
36 4,281,749
58 B 4,281,750
99 R 4,281,752
99 S 4,281,753

CLASS 193

34 4,281,754

CLASS 194

1 J 4,281,755

CLASS 198

356 4,281,756
358 4,281,757
398 4,281,758
725 4,281,759
846 4,281,760

CLASS 200

52 R 4,282,412
81.9 M 4,282,413
160 4,282,414
336 4,282,415

CLASS 201

6 4,282,066

CLASS 202

180 4,282,067
227 4,282,068
228 4,282,069

CLASS 203

11 4,282,070
38 4,282,071

CLASS 204

1 T 4,282,072
28 4,282,073
98 4,282,074
105 R 4,282,075
159.2 4,282,076
192 E 4,282,077
195 F 4,282,081
195 G 4,282,079
195 S 4,282,078
4,282,080
237 4,282,082
298 4,282,083

CLASS 206

45.24 Re.30,695
87 4,281,761
390 4,281,762
530 4,281,763

CLASS 208

113 4,282,084
120 4,282,085
139 4,282,086

CLASS 209

5 4,282,087
17 4,282,088
166 4,282,089
291 4,282,090
467 4,282,091
557 4,281,764
576 4,281,765
637 4,281,766
703 4,281,767

CLASS 210

90 4,282,093
167 4,282,094
169 4,282,095
182 4,282,096
200 4,282,097
238 4,282,098
247 4,282,099
384 4,282,100
403 4,282,101
616 4,282,102
682 4,282,092
709 4,282,103
754 4,282,104
798 4,282,105

CLASS 211

74 4,281,768

CLASS 215

12 R 4,281,769
100 A 4,281,770
220 4,281,771

CLASS 219

10.55 R 4,282,416
116 4,282,417
121 PP 4,282,418
137.44 4,282,419
146.24 4,282,420
314 4,282,421
486 4,282,422
490 4,282,423

CLASS 220

3.2 4,281,773
306 4,281,774

CLASS 222

82 4,281,775
132 4,281,776
134 4,281,777
153 4,281,778
501 4,281,779
610 4,281,780

CLASS 223

39 4,281,781
102 4,281,782

CLASS 224

325 4,281,783

CLASS 226

118 4,281,784

CLASS 227

120 4,281,785

CLASS 228

116 4,281,786

CLASS 229

17 G 4,281,787
22 4,281,788

CLASS 235

310 4,282,514
379 4,282,424
462 4,282,425
463 4,282,426

CLASS 236

44 C 4,281,789
93 B 4,281,790

CLASS 238

14 4,281,791

CLASS 239

5 4,281,792
11 4,281,793
20 4,281,794
265.35 4,281,795
310 4,281,796
533.12 4,281,797
542 4,281,798

CLASS 241

24 4,281,799
4,281,800
222 4,281,801

CLASS 242

55 4,281,802
58.1 4,281,803
75.2 4,281,804
76 4,281,805
125.1 4,281,806
206 4,281,807
218 4,281,808

CLASS 244

3.16 4,281,809
75 R 4,281,810
178 4,281,811
219 4,281,812

CLASS 248

97 4,281,813
4,281,814
479 4,281,815

CLASS 249

82 4,281,816

CLASS 250

213 VT 4,282,427
214 R 4,282,428
214 RC 4,282,429
221 4,282,430
236 4,282,431
322 4,282,432
356 4,282,433
359 4,282,434
390 4,282,435
423 R 4,282,436
445 T 4,282,438
470 4,282,439
492 A 4,282,437
499 4,282,440
515 4,282,441

CLASS 251

305 4,281,817
307 4,281,818
328 4,281,819

CLASS 252

32.7 E 4,282,106
42.7 4,282,107
51.5 R 4,282,108
78.3 Re.30,698
102 4,282,109
107 4,282,110
178 4,282,111
301.1 W 4,282,112
359 CG 4,282,113
429 B 4,282,114
440 4,282,115
461 4,282,116
508 4,282,117
518 4,282,118

CLASS 254

133 R 4,281,820

CLASS 260

2.3 4,282,367
6 4,282,119
17.4 GC 4,282,121
17.4 R 4,282,120
18 EP 4,282,122
18 PT 4,282,123
22 A 4,282,124
22 CB 4,282,125
27 R 4,282,126
28.5 AS 4,282,127
29.2 E 4,282,129
29.2 TN 4,282,128
29.6 SQ 4,282,130
29.7 R 4,282,131
30.2 4,282,132
30.6 R 4,282,133
30.8 R 4,282,134
33.4 UR 4,282,135
37 N Re.30,699
38 4,282,136
40 P 4,282,137
40 R 4,282,138
42.17 4,282,139
42.52 4,282,140
45.7 P 4,282,142
45.7 R 4,282,141
112.5 S 4,282,143
152 4,282,144
239 A 4,282,145
4,282,147
4,282,148
239 BB 4,282,146
245.2 R 4,282,149
4,282,150
326 A 4,282,151
340.3 4,282,152
340.6 4,282,153
343.3 G 4,282,154
343.5 4,282,155
343.6 4,282,156
346.74 4,282,157
347.8 4,282,158
348.21 4,282,159
388 4,282,160
397.1 4,282,161
408 4,282,162
409 4,282,163
428.5 4,282,164
429.7 4,282,165
4,282,166
453 P 4,282,167
455 A 4,282,168
4,282,169
465 D 4,282,170
928 4,282,171

CLASS 261

76 4,282,172

CLASS 264

59 4,282,173
111 4,282,174
248 4,282,175
328.13 4,282,176
564 4,282,177

CLASS 266

44 4,281,821
50 4,281,822
246 4,281,823
251 4,281,824

CLASS 269

29 4,281,825
41 4,281,826
189 4,281,827

CLASS 271

10 4,281,829

CLASS 272

1 E 4,281,830
5 4,281,831
75 4,281,832

CLASS 273

85 G 4,281,833
182 R 4,281,834
299 4,281,835
408 4,281,836

CLASS 277

12 4,281,837
53 4,281,838
93 SD 4,281,839
117 4,281,840
236 4,281,841

CLASS 279

2 R 4,281,842

CLASS 280

47.26 4,281,843
87.01 4,281,844
236 4,281,845
432 4,281,846
446 B 4,281,847
494 4,281,848
655 4,281,849
689 4,281,850
718 4,281,851
766 4,281,852
804 4,281,853

CLASS 281

21 R 4,281,854

CLASS 282

27.5 4,281,855

CLASS 285

15 4,281,856
34 4,281,857
39 4,281,858
55 4,281,859
137 R 4,281,860
265 4,281,861
382.2 4,281,862
4,281,863

CLASS 290

1 C 4,282,442
1 R 4,282,443
52 4,282,444

CLASS 292

229 4,281,864
258 4,281,865

CLASS 294

50.5 4,281,866
83 R 4,281,867
106 4,281,868

CLASS 296

1 S 4,281,869
24 R 4,281,870
65 R 4,281,871
100 4,281,872

CLASS 297

118 4,281,873
163 4,281,874
452 4,281,875

CLASS 299

1 4,281,876
2 4,281,877
4,281,878
64 4,281,879

CLASS 303

6 C 4,281,880
99 4,281,881

CLASS 305

35 EB 4,281,882

CLASS 307

141 4,282,445
238.5 4,282,446
255 4,282,447
273 4,282,448

CLASS 310

11 4,282,449
52 4,282,450
262 4,282,451
317 4,282,452
335 4,282,453
348 4,282,454

CLASS 312

140 4,281,883

CLASS 313

177 4,282,455
419 4,282,456

CLASS 315

3.6 4,282,457
4 4,282,458
39.71 4,282,459
4,282,463
46 4,282,462
398 4,282,461
411 4,282,460

CLASS 318

138 4,282,464
139 4,282,465
434 4,282,466
561 4,282,467
608 4,282,468
619 4,282,469
648 4,282,470
685 4,282,471
696 4,282,472
803 4,282,473

CLASS 320

2 4,282,474
6 4,282,475
46 4,282,476

CLASS 323

312 4,282,477
316 4,282,478

CLASS 324

51 4,282,479
61 R 4,282,480
65 P 4,282,481
83 A 4,282,482
158 R 4,282,483
207 4,282,484
208 4,282,485
371 4,282,486
445 4,282,487

CLASS 328

112 4,282,488
206 4,282,489

CLASS 329

103 4,282,490

CLASS 330

286 4,282,491
4,282,492

CLASS 331

2 4,282,493
94.5 H 4,282,494
94.5 S 4,282,495
116 FE 4,282,496

CLASS 332

19 4,282,497

CLASS 333

186 4,282,498
231 4,282,499

CLASS 335

18 4,282,500
258 4,282,501
266 4,282,502
276 4,282,503

CLASS 337

186 4,282,504
365 4,282,505
380 4,282,506

CLASS 338

25 4,282,507

CLASS 339

9 R 4,281,884
14 R 4,281,885
97 R 4,281,886
103 M 4,281,887
151 B 4,281,888

CLASS 340

52 R 4,282,508
69 4,282,509
146.3 F 4,282,510
4,282,511
147 LP 4,282,512
149 R 4,282,513
347 CC 4,282,515
365 S 4,282,516
503 4,282,517
566 4,282,518
628 4,282,519
629 4,282,520
632 4,282,521
711 4,282,522
860 4,282,523

CLASS 343

14 4,282,524
100 ME 4,282,525
715 4,282,526
725 4,282,527
727 4,282,528
765 4,282,529
784 4,282,530
791 4,282,531

CLASS 346

75 4,282,532
4,282,533
135.1 4,282,534
140 R 4,282,535
4,282,536

CLASS 350

6.8 4,281,889
77 4,281,890
96.18 4,281,891
96.21 4,281,892
96.31 4,281,893
162 R 4,281,894
171 4,281,896
257 4,281,895
274 4,281,897
281 4,281,898
289 4,281,899
292 4,281,900
336 4,281,901
4,281,902
349 4,281,903
356 4,281,904
377 4,281,905
427 4,281,906
4,281,907
476 4,281,908

CLASS 352

25 4,281,909

CLASS 354

62 4,281,910
173 4,281,911
4,281,912
203 4,281,913
244 4,281,914
275 4,281,915
286 4,281,916
289 4,281,917

CLASS 355

3 R 4,281,918
50 4,281,919
75 4,281,920
77 4,281,921
99 4,281,922

CLASS 356

2 4,281,923
73 4,281,924
73.1 4,281,925
124 4,281,926
4,281,927
140 4,281,928
241 4,281,929
350 4,281,930
372 4,281,931
416 4,281,932
425 4,281,933

CLASS 357

6 4,282,537
15 4,282,538
23 4,282,539
4,282,540
30 4,282,541
38 4,282,542

54 4,282,543
72 4,282,544

CLASS 358

4 4,282,545
22 4,282,546
44 4,282,547
107 4,282,548
150 4,282,549
160 4,282,550

CLASS 360

32 4,282,551
70 4,282,552
75 4,282,553
97 4,282,554

CLASS 361

56 4,282,555
4,282,556
117 4,282,557

CLASS 362

15 4,282,558
4,282,559
26 4,282,560
65 4,282,561
183 4,282,562
216 4,282,563
217 4,282,564
267 4,282,565
369 4,282,566

CLASS 363

15 4,282,567
54 4,282,568
87 4,282,569
4,282,570

CLASS 364

200 4,282,572
431 4,282,573
4,282,574
479 4,282,575
483 4,282,576
507 4,282,577
562 4,282,571
573 4,282,578
726 4,282,579
734 4,282,580
737 4,282,581
748 4,282,582
900 4,282,583
4,282,584

CLASS 366

30 4,281,934
174 4,281,935
209 4,281,936
303 4,281,937

CLASS 367

2 4,282,585
13 4,282,586
37 4,282,587
82 4,282,588
90 4,282,589
104 4,282,590

CLASS 368

10 4,282,591
37 4,282,592
63 4,282,593
82 4,282,594
200 4,282,595
262 4,282,596
280 4,282,597

CLASS 369

44 4,282,598
262 4,282,599

CLASS 370

100 4,282,600

CLASS 375

20 4,282,601

CLASS 400

171 4,281,938

CLASS 401

54 4,281,939

CLASS 402

38 4,281,940

CLASS 403

29 4,281,941
38 4,281,942
267 4,281,943

CLASS 404

26 4,281,944
121 4,281,945

CLASS 406

95 4,281,946

CLASS 408

1 R 4,281,947
3 4,281,948
241 R 4,281,949

CLASS 410

3 4,281,950
70 4,281,951

CLASS 411

19 4,281,581
176 4,281,699
548 4,281,580

CLASS 414

82 4,281,952
268 4,281,953
287 4,281,954
398 4,281,955
409 4,281,956
457 4,281,957
542 4,281,958
668 4,281,959
750 4,281,960
751 4,281,961

CLASS 415

89 4,281,962
178 4,281,963
203 4,281,964

CLASS 416

134 A 4,281,966
145 4,281,967
227 A 4,281,965

CLASS 417

2 4,281,968
52 4,281,969
53 4,281,970
203 4,281,971
415 4,281,972
424 4,281,973

CLASS 418

132 4,281,974
201 4,281,975

CLASS 422

13 4,282,178
27 4,282,179
46 4,282,180
53 4,282,181
68 4,282,182
78 4,282,183
106 4,282,184
142 4,282,185
180 4,282,186
190 4,282,187

CLASS 423

10 4,282,188
24 4,282,189
104 4,282,190
119 4,282,191
166 4,282,192
223 4,282,193
4,282,194
289 4,282,195
337 4,282,196
417 4,282,197
445 4,282,198
461 4,282,199
598 4,282,200

CLASS 424

14 4,282,201
23 4,282,202
47 4,282,203
49 4,282,204
4,282,205
59 4,282,206
78 4,282,207
4,282,208
81 4,282,209
89 4,282,210
180 4,282,211
200 4,282,212
4,282,213
204 4,282,214
232 4,282,215
240 4,282,216
4,282,217
4,282,218
246 4,282,219
4,282,220
249 4,282,221
250 4,282,222
4,282,223
4,282,224
251 4,282,225
4,282,226
4,282,228
256 4,282,227
258 4,282,229
4,282,230
263 4,282,231
267 4,282,232
4,282,233
269 4,282,234
270 4,282,235
4,282,236
273 N 4,282,237
273 R 4,282,238
274 4,282,239
4,282,240
4,282,241
4,282,242
4,282,243
4,282,244
275 4,282,245
4,282,246
276 Re.30,700
283 4,282,247
299 4,282,248
304 4,282,249
311 4,282,250
316 4,282,251
317 4,282,252
330 4,282,253

CLASS 425

62 4,281,976
149 4,281,977
376 B 4,281,978
391 4,281,979
461 4,281,980
467 4,281,981

CLASS 426

2 4,282,254
7 4,282,255
4,282,256
17 4,282,257
100 4,282,258
231 4,282,259
264 4,282,260
330.4 4,282,261
565 4,282,262
572 4,282,263
599 4,282,264
607 4,282,265

CLASS 427

9 4,282,266
38 4,282,267
39 4,282,268
54.1 4,282,269
93 4,282,270
98 4,282,271
126.3 4,282,272
398.3 4,282,273
402 4,282,274
428 4,282,275

CLASS 428

35 4,282,276
36 4,282,277
90 4,282,278
101 4,282,279
116 4,282,280
149 4,282,281
220 4,282,282
228 4,282,283
251 4,282,284
315 4,282,285
339 4,282,286
407 4,282,287
408 4,282,288
457 4,282,289
472 4,282,290
683 4,282,291

CLASS 429

93 4,282,292
185 4,282,293

CLASS 430

1 4,282,294
2 4,282,295
39 4,282,296
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